

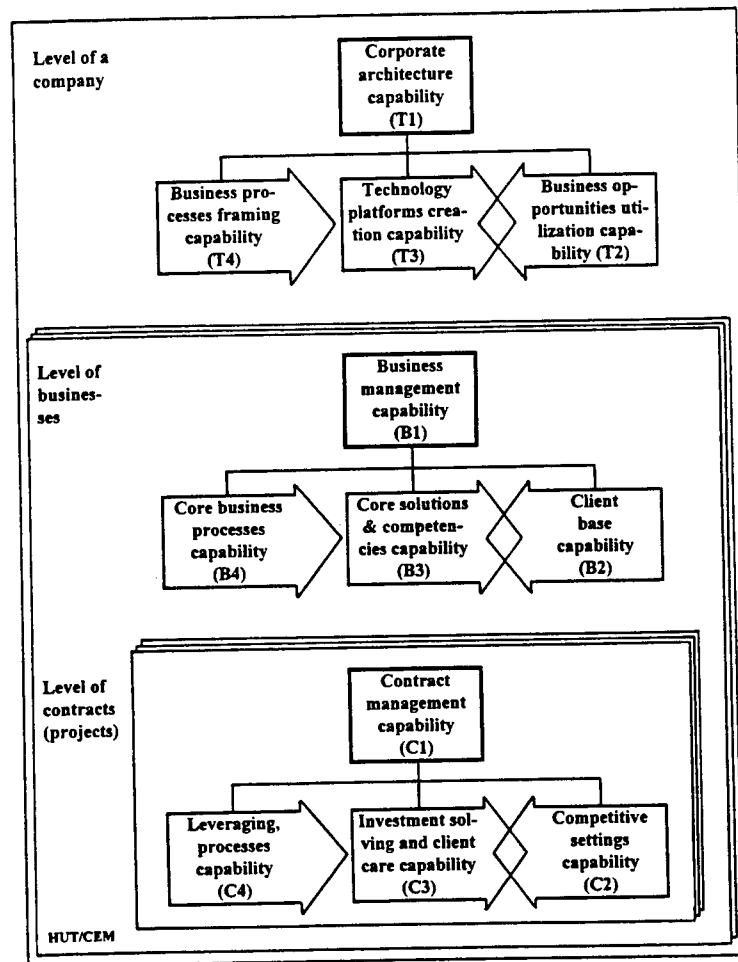
Towards A New Framework for Managing A Company's Competitiveness and Related Risks in Foreign Capital Investment Markets

Pekka Huovinen



PB98-145238

Viitekehys Suomen investointiklusteriin kuuluvien yritysten kilpailukyvyn kehittämiseen ja riskien hallintaan ulkomaisilla investointimarkkinoilla



Teknillinen korkeakoulu
Rakennus- ja yhdyskuntatekniikan osasto
Rakentamistalous

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Construction Economics and Management

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Towards A New Framework for Managing A Company's Competitiveness and Related Risks in Foreign Capital Investment Markets

Pekka Huovinen*

A working paper in the HUT/CEM Research and Working Paper Series is intended as a means whereby a HUT/CEM researcher's thoughts and findings may be communicated preliminary in nature and may require future revision and updating. This working paper is intended to function as a "market test" of a new framework designed for Finnish companies which operate in the foreign capital investment markets, particularly for managing their international competitiveness. The risk perspective is deliberately incorporated into an initial framework. All the stakeholders' feedback is welcomed. In this case, the primary stakeholders include 75 companies based in Finland (as respondents of the related competitiveness survey), the steering group (of the competitiveness study as a whole) as well as several other key companies, associations, governmental bodies, research organizations and experts engaged with managing effectively the life-cycles of their domestic and foreign capital investments.

The draft of this paper was presented at the PRM'97 Symposium "Risks in Projects and Project Oriented Business", Helsinki, Finland, 17-19 September 1997. The symposium was sponsored by the International Project Management Association (IPMA), the Project Management Institute (PMI), the Project Management Association Finland (PTY), the VTT Building Technology, and the HUT Department of Industrial Management. This version is revised as of 30 Oct 1997. All suggestions and reactions to this paper will be most gratefully received by the author.

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Printed at Libella Painopalvelu Oy

ISSN 1239-078X
ISBN 951-22-3841-1

Huovinen Pekka, Towards a new framework for managing a company's competitiveness and related risks in foreign capital investments markets. The Construction Economics and Management Unit of the Helsinki University of Technology (HUT/CEM). Working Paper 8. Otaniemi. 1997. 40 p. ISBN 951-22-3841-1.

Abstract

This working paper is related to a study of competitiveness which has been in progress during the years 1996-1997. **The capital investment markets** deal with design, implementation, services, and life-cycle aspects of investments in the utilization of natural resources, energy supply, telecommunications, transportation, other infrastructure, manufacturing, and general building concerns. The "Porterian" industrial cluster, related to the targeted domestic and/or foreign capital investment markets, consists of investors and investing conditions, **competing companies** which satisfy these capital investment needs with their technologies, systems, products and services, as well as production factor conditions and synergic industries. Here, this potential cluster based in Finland is initially titled "**The Capital Investments Cluster**".

A framework for managing a company's competitiveness in foreign capital investment markets is suggested. The framework consists of **three levels** (a company, its internationalized businesses and foreign contracts) and **12 constructs**. Consequently, **a company's competitiveness** consists of the three kinds of the primary elements: contract-specific (constructs C1-C4), business-specific (B1-B4) and company-specific elements (T1-T4). **The contract-level competitiveness** is defined as follows: the degree of success in bidding and winning foreign contracts, executing these according to their conditions, local regulations and standards, and ensuring profitability by managing any emerging risks, disputes, and/or legal claims in the local environment.

In this paper, **the risk management perspective** is incorporated into the suggested framework. Risks are seen to be inherent in a company's every level and part. As generally accepted in literature, **risk** is here defined as a set of identified events with assigned probabilities of occurrence and with a set of their predicted consequences on the realization of every strategy, or course of action, and thus causing a company's objectives to be unattainable, contrary to plans. Differences between the planned and the actual state of affairs may be negative (loss) and/or positive (gain) over the targeted period(s) or point(s) of time. **A new typology** of the following six principal risk types is introduced which differs from the literature. The risk types are as follows: (1) management risks, (2) competitive market risks, (3) investment solving and client care risks, (4) business process and frame risks, (5) strategic capability risks, and (6) performance measurement risks. In addition, **a new approach** for managing risks is designed with emphasis on those management situations when one or more of the identified and retained risks actually occur. Finally, **six examples** are presented in order to illustrate the management of the suggested principal risk types.

Keywords: Capital investment markets, construction, contracting business, competitiveness, industrial cluster, international business, project-oriented business, risk management.

Huovinen Pekka, Viitekehys Suomen investointiklusteriin kuuluvien yritysten kilpailukyvyyn kehittämiseen ja riskien hallintaan ulkomaisilla investointimarkkinoilla. Rakentamistalouden laboratorio. Teknillinen korkeakoulu. Selvitys 8. Otaniemi. 1997. 40 s. ISBN 951-22-3841-1.

Tiivistelmä

Tämä työpaperi on laadittu osana TKK:n rakentamistalouden laboratoriossa vuosina 1996-1997 toteutettua kilpailukykytutkimusta. **Investointimarkkinoilla** tarkoitetaan kansantalouksien yksityisellä ja julkisella sektorilla tehtäviä uus-, korjaus- ja ylläpitoinvestointeja luonnonvarojen (kuten mineraalien, öljyn ja kaasun) hyödyntämiseen, energian tuotantoon, teolliseen valmistukseen, tietoliikenteeseen, kuljetuksiin, muuhun infrastruktuuriin ja talonrakennukseen. **Investointiklusterilla** tarkoitetaan Porterin ”timantin” mukaan kotimaan tai (rajatuilla) ulkomaan investointimarkkinoilla toimivia investoijia ja investointiolosuhteita, **kilpailevien yritysten joukkoa**, jotka tarjoavat teknologioitaan, järjestelmiään, tuotteitaan ja palvelujaan em. investointien elinkaaren eri vaiheissa (suunnitteluun, toteutukseen, ylläpitoon ja jatkoinvestointeihin), tuotannontekijöitä ja synergisten lähialojen sidosryhmiä.

Työpaperissa esitetään **alustava viitekehys**, joka on tarkoitettu ulkomaisilla investointimarkkinoilla toimivien suurten ja keskisuurten suomalaisten yritysten käyttöön näiden reaalisien kilpailukyvyyn kehittämiseksi. Viitekehys on laadittu järjestelmäksi, joka koostuu kolmesta tasosta (yritys, liiketoiminnat ja projektit) ja 12 kilpailukyvyyn elementistä. Yrityksen **projekti- eli sopimustason kilpailukyky** määritellään seuraavasti: toimeksiantojen voittaminen (menestysaste) kansainvälisissä tarjouskilpailuissa sekä toimeenpano noudattaen sopimusehtoja ja paikallisia määräyksiä, täyttäen tilaajan vaatimukset, halliten riskit, ja varmistaen näin projektin kannattavuuden yritykselle.

Työpäpaperissa testataan, miten hyvin **riskien hallinnan näkökulma** soveltuu osaksi em. yrityksen koko liiketoiminnan kattavaa viitekehystä. Riskejä oletetaan tässä sisältyvän yrityksen liiketoiminnan ja kilpailukyvyyn jokaiseen osaan. Riski liitetään johdon päätöksentekoon ja tavoiteasetteluun, joka tähtää ko. yrityksen menestymiseen valitsemillaan ulkomaisilla investointimarkkinoilla. Kuten alan keskeisissä lähteissä, riski määritellään seuraavasti: jokin suunnitteluvaiheessa tunnistettu yrityksen ulkopuolinen tai sisäinen tapahtuma, jonka toteutumisen todennäköisyys kyetään määrittämään, aiheuttaisi toteutuessaan sen, että yritys ei saavuta yhtä tai useampaa asettamaansa tavoitetta. Tapahtuman toteutumisen välittömästi aiheuttamat - tai käynnistämän vaikutusketjun tuloksena syntyvät - poikkeamat voivat olla kielteisiä (ensisijainen näkökulma) ja/tai myönteisiä. Toisaalta kirjallisuudessa esitettyjä **riskityyppejä ja riskien hallintamenettelyjä on täydennetty** vastaamaan paremmin investointimarkkinoihin perustuvan liiketoiminnan, ko. yritysten ja sopimusten (projektien, toimitusten, palvelujen) logiikkaa. Ideana on hallita tehokkaasti myös riskejä, jotka toteutuvat ja joita ei voida (etukäteen) siirtää muiden osapuolten vastuulle. Riskit jaetaan tässä kuuteen tyyppiin: (1) johtamisriskit yritys-, liiketoiminta- ja projektitasoilla, (2) markkinariskit liittyen sidosryhmiin ja ympäristöön, (3) investointiratkaisuihin ja asiakassuhteisiin liittyvät riskit (4) liiketoiminnan prosesseihin ja puitteisiin liittyvät riskit, (5) kyvykkyyriskit liittyen yrityksen kilpailukykyyn ja osaamisalueisiin sekä (6) mittaamisriskit liittyen liiketoiminnan tavoitteiden saavuttamisen, tilan ja kilpailukyvyyn mittaamiseen. Lopuksi riskityyppejä ja niiden hallintaa havainnollistetaan **kuuden esimerkin** avulla.

Hakusanat: Investointimarkkinat, kansainvälinen liiketoiminta, kilpailukyky, projektiliiketoiminta, rakennusala, riskien hallinta, teollinen klusteri.

Pekka Huovinen

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	Page
Abstract	i
Tiivistelmä (abstract in Finnish)	ii
List of Contents	iii
1. Introduction	1
2. Defining an industrial cluster, businesses and companies based on capital investment markets	2
2.1 Fragmented industrial cluster based on capital investments	2
2.2 Five primary sets of businesses based on investment sectors	4
2.3 Five company groups based on core competencies	5
3. Designing a new framework for managing a company's competitiveness in capital investment markets	6
3.1 Company's competitiveness as a system	6
3.2 Contract-level and contract-specific competitiveness	8
3.3 Business-level and business-specific competitiveness	10
3.4 Company-level competitiveness	11
4. Incorporating the risk management perspective into the suggested competitiveness framework	12
4.1 Towards managing significant risks, uncertainties and changes	12
4.2 Towards an incorporated, applicable risk typology	15
4.3 Towards concurrent, effective risk management	20
5. Examples of six principal risk types related to foreign capital investment markets	24
5.1 Replacing the business-specific manager (risk type 1)	24
5.2 Compensating the postponement of the targeted capital investment (type 2)	27
5.3 Cross-checking innovation-based business opportunities (type 3)	29
5.4 Redesigning a new regional delivery and logistics process (type 4)	31
5.5 Acquisition of new business-specific strategic capabilities (type 5)	33
5.6 Renewing the performance measurement system (type 6)	35
6. Concluding remarks	37
List of references	38

1. INTRODUCTION

The author's background is related to the internationalization of construction industries or sectors in Finland. In the years 1991-1992, the domestic volume of construction dropped by over 40 % from the preceding peak years, and the volume is estimated to remain at this low level also in the future. Thus, **the construction industries and related associations in Finland** have set the increase in the degree of the internationalization as one of their primary goals in order to compensate for the downturn of the domestic market. The internationalization strategy includes, among other things, entering new export markets as well as applying and adjusting the existing technologies to the foreign markets (National Construction Task Force 1994). The efforts of individual companies as well as those of organized groups of exporting companies, have been supported by the Ministry of Trade and Industry, especially by its Technology Development Centre (TEKES).

Since the year 1992, we at the Construction Economics and Management unit at the Helsinki University of Technology (HUT/CEM) have set out to assist Finnish companies in developing their international competitiveness as well as synthesizing and tailoring the existing management concepts, for example, for entering the German building markets (Huovinen & Kiiras 1994; Kiiras & Huovinen 1995).

This working paper is related to the ongoing study of competitiveness, **"Improving the international competitiveness of Finnish companies operating in foreign capital investment markets"**, at the HUT/CEM. The study is financed by TEKES. During the years 1996-1997, the researchers have developed an initial competitiveness framework as well as carried out an analysis of the literature, a mail survey among 200 large and medium-sized companies based in Finland, and a cooperation inquiry among over 100 Finnish business and IT consultants, academic and commercial training institutions, and research organizations. The results will be published both in Finnish and English by the HUT/CEM.

The aims of this paper are as follows:

- Defining the generic industrial cluster based on capital investment markets, and differentiating this further into the five businesses as well as into the five company or competitor groups
- Introducing an initial conceptualized framework for managing a company's competitiveness in foreign capital investment markets

- Incorporating the risk management perspective into the suggested competitiveness framework, with the focus on the management situations when the identified and retained risks actually occur
- Presenting examples of the management situations where the six primary types of dynamic risks do actually occur and what strategy the management in question could adopt and utilize both as immediate reactions and sustainable developments.

2. **DEFINING AN INDUSTRIAL CLUSTER, BUSINESSES AND COMPANIES BASED ON CAPITAL INVESTMENT MARKETS**

2.1 **Fragmented industrial cluster based on capital investments**

According to Porter (1990 p. 73), the basic unit for understanding national [competitive] advantage is the industry. Nations succeed not in isolated industries, but in **clusters of industries** connected through vertical and horizontal relationships. A nation's economy contains a mix of clusters. Typical strong clusters have been formed as traditional industries (such as metal, electronics, pulp & paper, and shipbuilding industries) with clear, recognizable boundaries.

It is argued here that there are several significant areas of economies which deserve to be approached as clusters of industries or service sectors, but which so far have been neglected in part or entirely. One of these areas, waiting to be recognized as a cluster, is based on all kinds of capital investments. **The capital investment markets** deal with design, implementation, services, and life-cycle aspects of investments in the utilization of natural resources, energy supply, telecommunications, transportation, other infrastructure, manufacturing, and general building concerns. The industrial cluster, related to the targeted domestic and/or foreign capital investment markets, consists of investors and investing conditions, competing companies which satisfy these capital investment needs with their technologies, systems, products, and services as well as production factor conditions and synergic industries. Here, this potential cluster is initially titled "**The Capital Investments Cluster**" which, in fact, consists of the investments-related parts of the other industrial clusters. Thus, the boundaries of the capital investments cluster are only partly identifiable, and partly blurred.

The generic scope of capital investment includes sector and feasibility studies, engineering & design, supply of a production line with installations and start-up, construction of buildings, facilities and infrastructure, as well as after-investment services. Particular investment needs, i.e. projects,

contract scopes and task contents, vary markedly within this generic scope. Thus, **the capital investments-based business** is defined as having the following generic features (applying Huovinen 1996):

- Companies are solving and realizing investors' capital investment needs by participating in their complex investment processes in targeted locations, geographically across the globe. In each location or market, both investors and competing companies may be of national or foreign origin.
- Competing companies (or alliances of companies) offer, and one or several of them are chosen by the investor to carry out all or only specified tasks of the generic scope of his particular capital investment.
- Each investor applies a specific procurement method (in the UK or EU context, called contracting mode in the US context) to achieve the best possible results in terms of functionality, buildability, quality, money, time and other investment criteria. The procurement method determines the number, roles and responsibilities of companies to become involved as well as the nature of competition, by project.
- The dominant characteristic is still project or contract-specific subcontracting, and gradually also longer term partnerships and networking among all the parties involved. As a rule, the leading partner (typically contractor or supplier) possesses a core core technology, a system or investment solution, a product and/or services that the targeted investors prefer most.
- Typical foreign operations are technology transfer and licensing, systems selling, project exports, joint ventures and consortiums, subcontracting and management contracts and other services contracts.

In the 1990s, the stream of the "Porterian" studies on the national clusters of industries have been carried out in many OECD countries. The studies on **Finland's** ten industrial clusters were carried out and managed by The Research Institute of The Finnish Economy (ETLA). These cluster studies were financed mainly by the Fund of Finland's Independence (SITRA), ETLA, the Ministry of Trade and Industry (KTM) and TEKES. Two of the identified clusters are as a whole based on satisfying capital investment needs. **The engineering industry** has developed [towards an industrial cluster] together with the forest, basic metals production and energy technology clusters in Finland (Kässi 1996). **The construction sector** has suffered from the deep domestic recession and gone through a state of transition (Matilainen et.al. 1994). In the national summary report, our construction industry was judged [only] as a defensive or latent cluster (Hernesniemi et.al. 1995).

The structure of **Finland's capital investments cluster** is very fragmented (as of the year 1997), but also at the same time highly synergic with our other industrial clusters. It is partly strong (related to investments of the forest cluster) and semi-strong (related to investments of the basic metal

and energy clusters), potential or emerging (related to investments of the telecommunications and environment clusters), and latent (the construction cluster). It was concluded that a **new industrial cluster strategy** must be designed in order to integrate the synergic policies needed to strengthen all the parts belonging to Finland's fragmented capital investments cluster (Huovinen 1997).

2.2 Five primary sets of businesses based on investment sectors

The capital investments-based business can be differentiated and networked across investment sectors into **the five sets of distinct businesses** as follows, Fig. 1 (Huovinen 1996 pp. 210-211):

1. businesses related to natural resources, i.e. life-cycles of investments in exploration, use and processing of minerals, oil and gas reserves
2. businesses related to power utilities, i.e. life-cycles of investments in energy production based on using coal, water, oil, gas, wind etc., incl.related buildings, facilities and other infrastructure
3. businesses related to industrial plants, i.e. life-cycles of investments in manufacturing and process plants incl. related buildings and infrastructure
4. businesses related to telecommunications networks and space technologies, i.e. life-cycles of investments in mobile and fixed networks as well as space systems, incl. related facilities and infrastructure
5. businesses related to other buildings and infrastructure, i.e. when the first four businesses are already differentiated, life-cycles of construction investments in housing and leisure, commercial and public buildings as well as roads, railways, airports, harbors, waterways and other infrastructure.

Each set of these contracting-driven businesses requires distinct types and combinations of technologies and competencies. Many **large, diversified contractors** are currently trying to stretch and deploy their competencies across two, or more or all the five sets of businesses.

In addition, large contractors are typically integrated backward and/or forward (Huovinen 1990). **Backward integration** includes design & engineering services, manufacturing of machinery, equipment, materials and building components, trade contracting, and in-coming wholesaling and transportation services. In general, Japan has gone further [than the US or EU industry] in integrating design and off-site manufacture and creating a fully [backward] integrated construction industry (WS Atkins 1994 p. 81). **Forward integration** includes property related businesses, trading, plant and utility operations & management services as well as out-going distribution and transportation services.

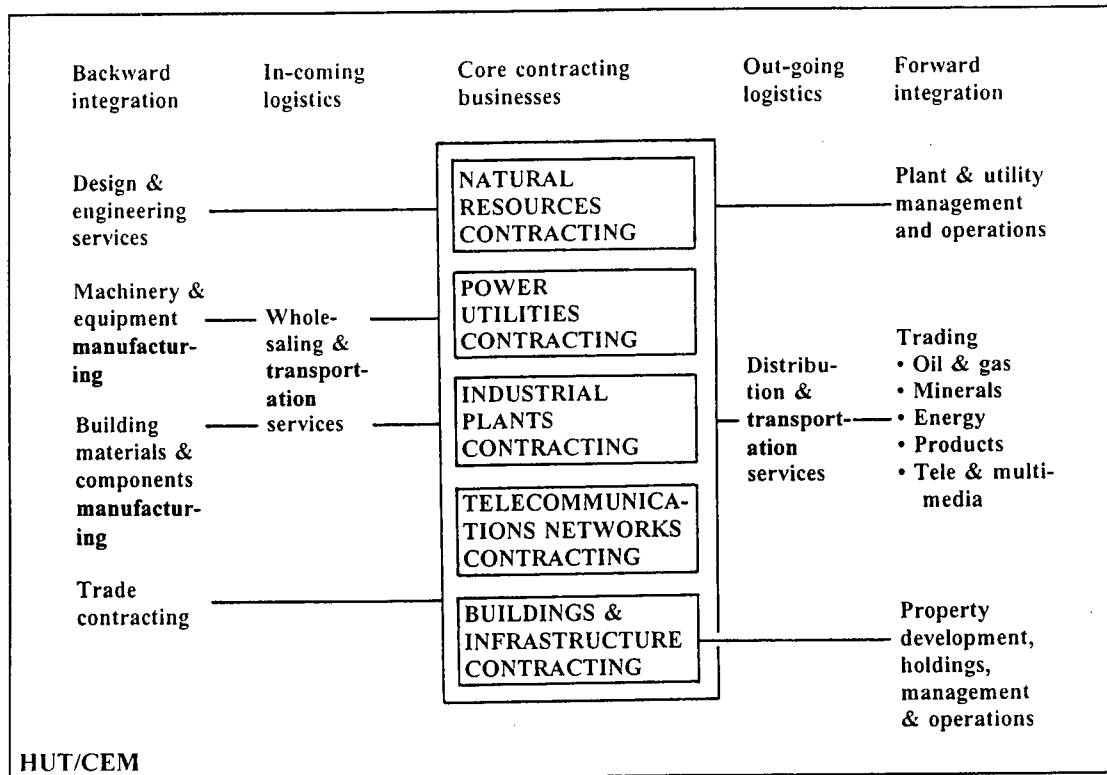


Fig. 1. Five core contracting businesses and sets of the interdependent, networked businesses. (Huovinen 1996 p. 210-211)

2.3 Five company groups based on core competencies

It is argued that capital investment sectors of economies, or of societies, form a **sustainable basis** for any related company to define its mission, to choose investment types to be solved, as well as to choose its core competencies, targeted domestic and foreign markets (environments) and investors. Alternative competitive strategies and **strategic competitor groups** can be identified by companies' roles in value-leveraging processes, such as processes conducted by a general contractor, engineering contractor and plant contractor, subcontractor, process consultant, engineer, supplier and O&M service company. Companies belonging to the same group have similar competitive behavior, based on similar **in-house core competencies**. Their offerings, or deliverables, to targeted investors, related roles and contractual responsibilities cover the same investment scope, as broad or narrow (Huovinen 1996 pp. 212-213; applying Porter 1980 pp. 129-132). Thus, the population of companies operating in capital investment markets are here differentiated into the **five company or competitor groups** as follows (with the Finnish examples):

- **technology-intensive contractors** incl. competing groups of system, turnkey, engineering and plant contractors (e.g. Nokia Telecommunications)

- **construction contractors** incl. competing groups of design+build, general, CM, building, civil, HEPAC, other trade and specialty contractors (e.g. YIT Corporation Oy/construction division)
- **process engineers, designers and consultants** incl. various competing groups related mainly to industrial and other productive processes (e.g. Jaakko Poyry Oy/wood processing)
- **construction designers and consultants** incl. various competing groups of architects, engineers, CM/PM managers and consultants, related mainly to buildings and infrastructure (e.g. LT-Consultants Oy/transportation)
- **suppliers of building products and materials** incl. various competing groups manufacturing concrete products, steel structures, ceramic and wooden products and material as well as HEPAC and building automation systems (e.g. ABB Installations Oy/HEPAC works and systems).

3. **DESIGNING A NEW FRAMEWORK FOR MANAGING A COMPANY'S COMPETITIVENESS IN CAPITAL INVESTMENT MARKETS**

3.1 **Company's competitiveness as a system**

It is argued that the question "**How can a company create and sustain its superior competitiveness in foreign capital investment markets?**" can be widely accepted as the generic management problem, and shared by all the practitioners, academics and consultants alike. This problem will be approached here from the systems management perspective.

The pragmatic foundations for considering a competitiveness framework which would benefit companies operating in foreign capital investment markets are as follows. There will be more and more **advanced investors**, world-wide, who aim at maximizing the total benefits of their capital investments in, for example, new industrial plants (McManamy et.al. 1994). Consequently, the investors will prioritize those internationally leading companies and investment solutions which will create and manage complete value-leveraging supply chains, the investments' life-cycles, inputs and outputs, as well as environmental aspects. Thus, the traditional contracting modes, contract scope, and roles, typically determined by trade or profession, are becoming too narrow and rigid. On the other hand, this enlargement of contract scope, responsibilities, and tasks will also open up new business possibilities (Huovinen 1997 p. 5).

An investor will choose **an investment strategy** and specify the contracting mode(s) which he perceives will ensure the attainment of the objectives set for his investment in question. Further, the contracting mode will determine the participants, their responsibilities and the interconnected network of contracts which, in turn, will establish **several investment-specific client chains**. According to today's practice, tens or hundreds of companies participating in these chains will be replaced and subcontracted by each new investment project (as the outcome of the adopted contracting procedure). Each participating company must tailor its competitive strategy and core investment solution to each targeted competitive situation. A company may identify, market and bid, hurry up or postpone indefinitely, and finally win or lose tens of major competitive situations simultaneously (Huovinen 1997 p. 5).

A company's competitiveness is designed as a **balanced, dynamic system** of the strategic capabilities (constructs) and their relations. It is proposed that (proposition 1):

The owners, management and personnel of the company in question will be able to create and sustain its competitiveness by developing and utilizing continuously the 12 strategic capabilities and, particularly, by managing the dynamic, changing causal relations between the capabilities and business processes and operations. It is necessary, but at the same time sufficient to assume that managing companies as the proposed systems is only one of the (most) viable ways to sustain in the longer term.

The theoretical foundations for choosing the primary constructs of a suggested competitiveness framework and defining these as a company's capabilities lie in Penrose's (1959) pioneering theory of the growth of the company, the core competencies concept (Prahalad & Hamel 1990), reengineering idea (Hammer & Champy 1993), industrial buying behavior models, and a set of international and national guidelines (such as FIDIC's) for arranging competitive bidding competitions.

Applying Penrose's (1959) pioneering theory of the growth of the company, **a capital investments-based company** is seen as "a collection of productive resources" for the purpose of creating, bundling and supplying investment solutions (systems, services and/or products). A company aims at growth in order to survive, and this growth is ... based on continuous use and development of these resources. In addition, a company's management's primary task is seen as "making use of productive opportunities" in foreign capital investment markets (pp. 24-25, 31-32, 65-66).

A **suggested framework** consists of three levels: the level of a company as a whole, the level of internationalizing businesses, and that of foreign projects, or contracts (Fig. 2). The twelve strategic capabilities cover or support all the company's areas of management, ownership, core competencies, technologies, offerings, business-specific functions, contract-specific processes, personnel and other resources.

Each strategic capability of a company includes the knowledge (accumulated and new), preparedness (organizational, managerial and process), systems (management, information and operational), skills (team-specific and individual) and resources (human, physical and financial) which are needed for performing all the related business processes, functions, operations and tasks successfully, e.g. either in conformance with the planned and desired outcomes or as a response to (suddenly) emerging management situations.

3.2 Contract-level and contract-specific competitiveness

At the level of contracts, the management's emphasis is on succeeding in the "end solutions competition". All the tests concerning a company's day-to-day or short-term competitiveness (performance) take place in the targeted market segments. Thus, **a company's contract-level competitiveness** is defined as the degree of success in (a) bidding and winning foreign contracts, typically in competitive bidding settings, (b) executing these contracts according to their conditions, (c) adjusting to local regulations, standards and environmental factors, as well as (d) ensuring the clients' satisfaction and a company's own profitability a.o. by managing any emerging risks.

It is argued that a company will manage best **its contract-specific, or project-specific competitiveness** through excelling in the following four capabilities (the lower level, Fig. 2):

- (C1) **Contract, or project, management capability.** To bid and win the targeted contract (project) in competitive bidding settings. -To execute the won contract according to their conditions, local regulations and standards. -To manage anticipated and other emerging risks, disputes and legal claims in the local environment. -To ensure that the client meets its objectives and expectations. -To ensure that the company meets its financial and other objectives set for the performance.
- (C2) **Competitive settings capability.** To target the most attractive investor(s) and their investments at any given period of time. -To learn in-depth each investor's (client's) buying behavior. -To know players and their competitive strategies and offerings.

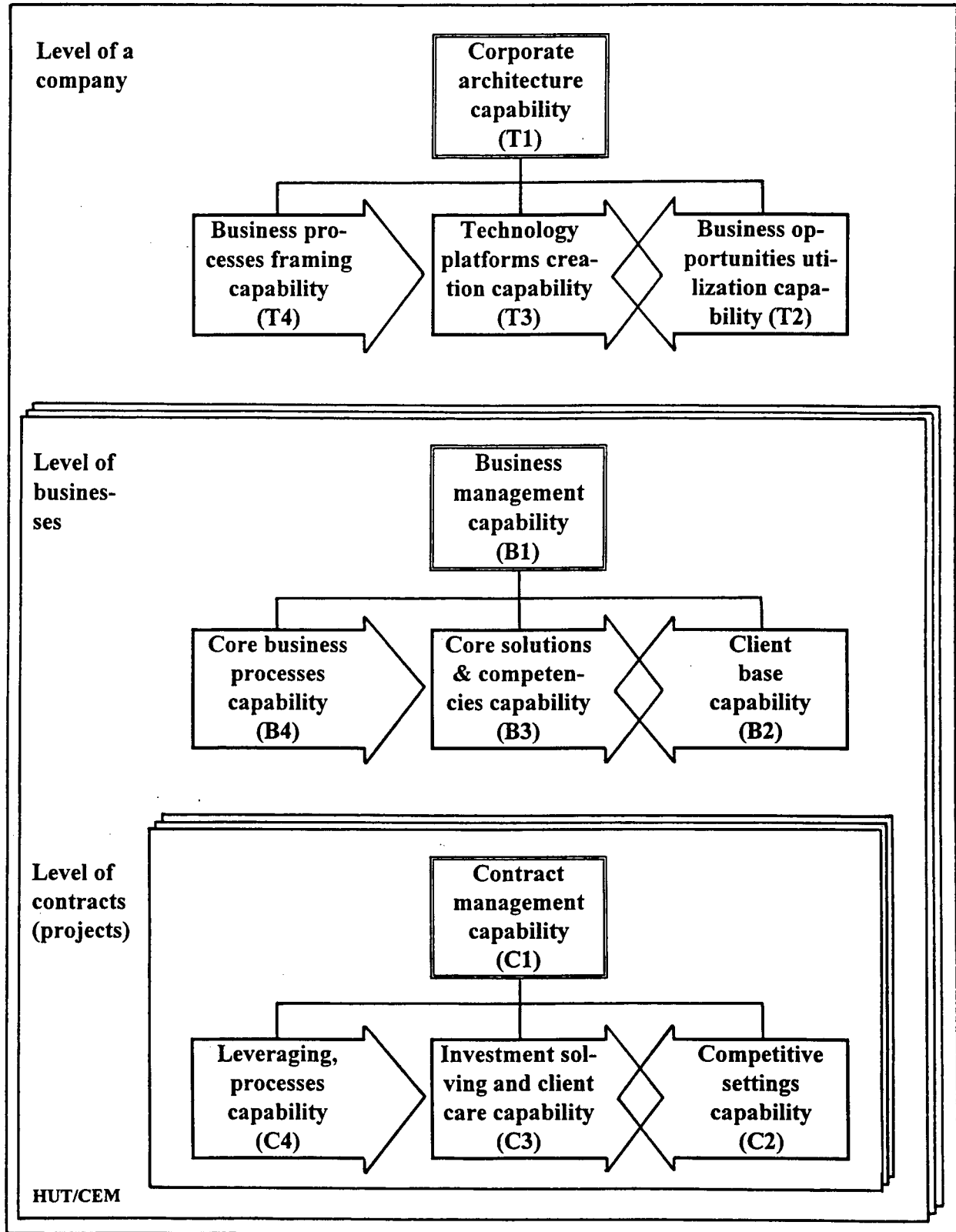


Fig. 2. A suggested framework for managing a company's competitiveness in foreign capital investment markets. A company is defined as a dynamic system consisting of the three kinds of subsystems (at the three levels) and the 12 kinds of capabilities (constructs). Risks (and uncertainties) are inherent in the creation, upkeep and utilization of each capability. (Huovinen 1997 p. 7)

-To anticipate major changes in the competitive environment. -To build the best local, regional and global informants network.

- (C3) **Investment solving and client care capability.** To tailor and realize the most competitive strategy. -To adjust and tailor the best solution (i.e. system, plant, engineering & design, machinery, building products, construction, erection and/or start-up services) for the investment in question. -To manage the client relationship successfully. -To tailor and offer pre-sales and after-sales services.
- (C4) **Leveraging processes capability.** To create and tailor the most effective leveraging processes needed. -To adjust the selling process based on direct client feedback and perceived actual competitive situation. -To create and manage the execution process (i.e. turnkey delivery, design, supply, erection and/or start-up). -To create and adjust pre- and after sales-service processes, incl. financial engineering (when required). -To integrate the processes with the local, regional and global business environment, also across the globe. -To meet the primary quality and environmental requirements set for the contracting party.

3.3 Business-level and business-specific competitiveness

At the level of (internationalizing) businesses, or strategic business areas, the business management's emphasis is on competitive issues and ensuring its business performance both in the short- and longer term. A company's **business-level competitiveness** is defined as the degree of success in (a) solving the targeted investment needs among the focused, satisfied client base, (b) developing and applying profitably core competencies and solutions, (c) designing and establishing effectively core business processes and their supporting processes as well as (d) driving the synergic, interdependent fit between the related capabilities.

It is argued that a company may manage best its **business-specific competitiveness** through excelling in the following four capabilities (the middle level, Fig. 2):

- (B1) **Business management capability.** To make scenarios on changes in the targeted investment needs. -To anticipate and evaluate the emerging and current ways to satisfy these investment needs with profit. -To perceive priorities and changes in the targeted client (investor) bases and their behavior. -To make and realize business plans incl. goals, strategies, actions, resources. -To make and realize investments plans concerning the business and capabilities. -To manage high business performance based on the accurate real-time measurement.
- (B2) **Client base capability.** To manage the fit between the client base strategy and continuously changing group of targeted clients, their investment and related competition. -To ensure the most profitable client and contract base. -To master buying behavior patterns and accumulation of the in-depth knowledge of changing compe-

titive environments. -To make win/loss analyses with feedback. -To develop client base teams and key marketing persons (e.g. client accountants).

(B3) **Core solutions capability.** To manage the fit between the core solutions strategy and its applications in contracts being targeted, won/lost and executed. -To ensure a set of viable competitive strategies (for anticipated competitive settings). -To redesign continuously a range of core investment solutions. -To sustain the platform of superior core competencies (to create, buy and/or cooperate). -To create and manage the most effective creation and application processes. -To develop core solution teams and key persons.

(B4) **Core processes capability.** To manage the fit between the core processes strategy and its applications in contracts being pre-serviced, bid, executed and after-serviced. -To ensure the most effective core processes and their supporting processes. -To integrate its own process with possible partners' and subsuppliers' processes into the total, enlarged, seamless, transparent supply chain. -To develop core process teams and key persons (e.g. process owners).

3.4 Company-level competitiveness

At the company level, top management's emphasis is on attaining the financial objectives set for each operating year or period and thus satisfying the board of shareholders (as well as expectations imposed by investors through stock exchanges). However, the short-term developments should not mean that the management neglects securing a sustainable future for the company. The latter goal requires a.o. that the top management will ensure (a) the fit between a company (as a whole) and its internationalizing businesses, and (b) the fit with the targeted and won contracts, both today and in the longer term. Thus, **company-level competitiveness** is defined as the degree of success in designing, realizing and updating (a) the company architecture for knitting everything together, (b) strategy for anticipating and utilizing attractive business opportunities, (c) technology strategy for managing viable technology roadmaps, platforms and core technologies, and (d) business frame for businesses, contracts, and processes.

It is argued here that a company may ensure best **its company-level competitiveness** through excelling in the following four capabilities (the upper level, Fig. 2):

(T1) **Company architecture capability.** To sustain the most effective architecture which consists of owners (and other financing sources), top management team, business structure, market base, technology platforms, company size and profitability (also by business), management system, values and image. -To manage fit and synergies among these architectural elements as well as with businesses, contracts and capabilities. -To build the most effective, real-time measurement system to enable the attainment of high performance in each business and contract.

- (T2) **Business opportunities utilization capability.** To anticipate and evaluate emerging and current business opportunities. -To formulate and evaluate alternative ways (strategies) to utilize these opportunities profitably. -To choose and update the targeted capital investment needs and the related businesses which the company will master (and internationalize or globalize). -To bundle sources for attractive client- or investment-specific financing packages. -To manage synergies among the businesses. -To manage synergies among the targeted market and client bases. -To make and realize investment plans concerning the targeted new businesses (as a part of the desired business structure).
- (T3) **Technology platforms creation capability.** -To make scenarios on alternative developments in the targeted capital investment needs. -To anticipate and evaluate related emerging and current technologies (and platforms). -To choose and update the company's own technology platform(s) for its businesses. -To formulate and evaluate alternative ways (e.g. create, buy and cooperate) of mastering the targeted core technologies and competencies. -To combine, realize and update the company-level technology strategy. -To manage synergies among the platforms, technologies and competencies. -To make and realize investment plans concerning the chosen technology platforms (e.g. R&D developments and acquisitions).
- (T4) **Business processes framing capability.** -To make scenarios on alternative routes for the company to strengthen and renew its viable business and market structures. -To anticipate and evaluate the effectiveness of related emerging and current ways to frame, organize, execute and support the company's business processes. -To design alternative viable business processes and their frames (incl. organization structure, IT systems and administration). -To choose, design, realize (e.g. internationalize or globalize and localize) and update the company's business frame. -To manage synergies among the business processes and frame. -To make and realize investment plans concerning the chosen business processes and frame.

4. **INCORPORATING THE RISK MANAGEMENT PERSPECTIVE INTO THE SUGGESTED COMPETITIVENESS FRAMEWORK**

4.1 **Towards managing significant risks, uncertainties and changes**

The question "What is the nature of risk?" is addressed first. Risks are here seen to be closely related with competitiveness in the same way Bechtel, for example, looks at risk as **an opportunity for international competitiveness and profit** (Rutgers & Haley 1996). In the literature, it is emphasized that the industries based on capital investment markets are subject to more risk and uncertainty than many other industries. For example, "[capital] projects should be managed taking into account that there are always risks" (ISO 1996 p. 17). Most people would agree that risk plays a crucial role in the business decision-making process: risk vis-a-vis loss tempers the pursuit of return. However, there is less agreement about what constitutes risk. Risk can manifest itself in numerous

ways varying over time and across businesses, processes as well as activities. The ultimate risk concern is when a company's insolvency could result from the risk event occurring (Hough 1997 p. 172). Essentially, it stems from uncertainty, which in turn is caused by a lack of information. (Flanagan & Norman 1993 p. 1)

Here, the following **definition of uncertainty** is adopted: a management situation, typically a decision-making or planning situation, where a set of viable alternatives is determined and each alternative's possible outcomes are known, but the likelihood of those outcomes occurring is either unknown or not well defined. For example, there are no historic data or previous experience related to this situation. It is one of a kind, or the first one of a kind to be encountered by the decision-maker in question. Then, (full) **certainty** refers to a management situation where every viable alternative is known to lead invariably to a specific outcome (Lilien & Kotler 1983 p. 36; Flanagan & Norman 1993 p. 22).

PMI (1996 p. 169) defines a **risk event** as a discrete occurrence that may affect the project for better or worse. These occurrences are related, for example, to value-adding changes (p. 57), unrealistic dates, cost estimates, design, resource plans, ... (p. 66), changes in requirements, design errors, omissions and misunderstandings, poorly defined or understood roles and responsibilities, poor estimates, and insufficiently skilled staff (p. 114), and contested changes (disagreement on compensation for the change) are variously called claims, disputes, or appeals (p. 132).

Related to managing building projects, we at the HUT/CEM have defined risk as possible **obstacles** with the consequences that the set project objectives [of a contractor] or an owner's requirements cannot be met. A viable procurement method is chosen and used as a means both to reach the set objectives and to treat risks (Pernu et.al. 1997).

In addition, a company may adopt the following two views for identifying the risks involved. A **static or pure risk** exists for the management when the potential final outcomes are only the chance of loss or no loss (Flanagan & Norman 1993 p. 23). Strictly speaking, risk involves only the possibility of suffering harm or loss (PMI 1996 p. 111).

A **dynamic or speculative risk** involves the chance of both gain and loss for a foreign contract or an internationalizing business (Flanagan & Norman 1993 p. 23). In the project context, however, risk

[management] is also concerned with opportunities (positive outcomes) as well as threats (negative outcomes); (PMI 1996 p. 111). In the ISO/DIS 10006 document (1996) the term risk covers both aspects of minimizing the impact of potential negative events and taking full advantage of opportunities for improvement. For example, Ward & Chapman (1997 p. 96) state that "an important long-term benefit can be the undermining of a risk-averse culture based on [too one-sided] a view that uncertainty and risk have wholly negative implications and are to be avoided as far as possible".

"[Capital investments-based] companies have to operate in domestic and foreign environments where there are many **uncertainties**. Their aim is to identify, analyze, evaluate and operate on risks. Accordingly, these companies are converting uncertainties into risks. As a result, ... we confine ourselves to using the term risk to encompass uncertainty" (Flanagan & Norman 1993 p. 22). In other words, "[capital] projects are all about change or transformation. Transformation management implies uncertainty. If we compare uncertainty and risk, we will see that the essential difference is [only] awareness ..." (Hartman 1997 p. 16). Wearne (1997 p. 105) phrases the same bluntly by giving the advice that "if the word risk [and its management] is not allowed, use uncertainty. Risk or uncertainty is the only reason why managers are needed".

In addition, the question "**How do we manage all the risks which can be identified?**" is addressed as follows. For **risky management situations** (or problems) to exist in companies, the following necessary (and at the same time sufficient) conditions can be stated (applying Ackoff 1962):

- Someone (one, two or several decision-makers), within a company in question, has a specific problem related to strategies, actions, operations, performance and/or competitiveness in the targeted foreign capital investment market (segment).
- A desired objective and level of a company's performance have been determined, for example because of contractual and other obligations.
- There are at least two alternative strategies, or action plans, that are not equally effective in bringing about those desired outcomes.
- Some state of doubt, uncertainty, exists about which alternative is best.
- A management problem context is identified, that is, (a) those external competitive market factors not under the control of the decision-maker that can affect the outcomes, and (b) those internal factors that are involved with realizing the business plan(s) and attaining the set objectives.

- Relatively small number of (non-)identifiable causes will typically produce a large majority of the severe problems or defects (Pareto's law). These special causes are here identified and managed as unusual risky events, when random causes are classified and treated as normal process variation.

Summarizing the previous notions, the management of a company, its (internationalizing) businesses and contracts related to capital investment markets also involves managing **significant risks** which are here defined as follows:

A company's management is in a decision-making or planning situation where (a) decision-maker(s) involved is (are) able to determine the desired objectives and a set of viable alternative strategies, or courses of action, for attaining these objectives. Significant risk is a set of **identified events** with assigned high probabilities of occurrence and with a set of their predicted severe consequences for the realization of every strategy, or course of action, which thus cause the objectives to be unattainable, contrary to the company's plans. Differences between the planned and actual state of affairs may be negative (loss) and/or positive (gain) over the targeted period(s) or point(s) of time. However, this risk also encompasses uncertainty, it is those **sudden events**, with immediate or estimated severe consequences which have not been identified beforehand (as a part of the risk management process).

4.2 Towards an incorporated, applicable risk typology

The question "**What risk typology do we apply in order to ensure effective risk management?**" is addressed next. In the literature, **the existing risk typologies** already cover all the various possible dimensions and aspects as one can think of as follows:

- pure/static vs. speculative/dynamic; physical, technical, financial (capital related), or business (asset related) risk; environmental, market/industry, company and project/individual risk (Flanagan & Norman 1993 p. 53-55)
- total firm/portfolio and single investment project contexts; probable and possible maximum losses; high, moderate and low risks (Hertz & Thomas 1983 pp. 9-10, 45-48)
- risks are related either to the project processes or to the compliance of the project product with project objectives; risks in cost, time, product, security, professional liability, critical and new technologies, information technology, safety, health, and environment (ISO 1996 p. 16-17)
- investor's in-house capabilities, e.g. budgeting, design, team-building, and monitoring talents as well as appetite for conflict and fund resources (Macomber 1989)

- customer-generated risks include risks of late payments, project termination, client insolvency, fitness of purpose guarantees, overreliance on client, relative size factor, and risk due to any advice given to clients (Kometa et.al. 1996)
- political risks, e.g. revolutions, currency devaluations, local participation laws, expropriation and nationalization; macrorisks (general); microrisks (impacting a specific firm or business sector), e.g. nature of firm's operation, firm's relationships to government and local power groups, involvement of local business interests, regional and external factors, influence of (independent) power groups, nationalist attitude towards firm, project/firm desirability, and government policies (Ashley & Bonner 1987)
- risk in development, construction and operations phases of projects; developer/sponsor, contractor, lender, and host government risks; retained/allocated risks; bottom-line risks are related to performance, schedule and cost (Rutgers & Haley 1996)
- risks associated in construction, physical, legal and contractual, performance, economic, political and public risks (Badu & Yamamoto 1993)
- sources of risks in building projects, e.g. market conditions (economic state, supply and site), building project (architectural requirements, short building period, limited budget), and project manager or owner (lack of experience and lack of financing resources); (Pernu et. al. 1997)
- a (project) organization's external vs. internal risks (PMI 1996 p. 111).

The risk typologies, reviewed above, cover mainly capital investment-specific risks. In addition, the insurance sector has developed its typologies for company-specific risks. But it seems that one integrated, comprehensive and at the same time applicable risk typology is still missing.

Thus, a **new risk typology** is here introduced. It has its origin also in the author's direct observations (when working several years inside three Finnish corporations) that top, business and project managers have a natural tendency to think about particular (also risky) issues first in **physical terms**. This will help them to locate and ultimately assign the issue to somebody inside or outside their organization. In order to ensure the applicability of the typology, it is proposed that (proposition 2):

The manager in question can manage, by definition, only the affairs that he or she has at least some control over. The more incorporated into the line organization's responsibilities and activities a risk typology is, the more coherent and effective those courses of actions are which the various teams, individual managers and key persons involved decide to take (for managing risks).

This risk typology is based on and complies with the suggested framework for managing a company's competitiveness in foreign capital investment markets. Principal, risky decision-making, planning, or implementation situations are attached to each of **the four kinds within a company's business dimensions**: management (at the levels of company, businesses and contracts), targeted competitive markets (including stakeholders), marketable offerings (investment solutions, products, services, underlying competencies and technologies), and business processes (with their frames).

The fifth principal risk type involves the problems in building and allocation of a company's **strategic capabilities**. When a company is seen here as a collection of strategic capabilities, it follows that a company's every activity and performance (day-to-day utilization of capabilities) are based on the quality and availability of these capabilities. It is proposed that (proposition 3):

Weakness(es) in the quality and attributes of the underlying capabilities and/or failures in building or allocation of these capabilities are the sole or one of the primary sources of all the six principal risk types. This holds even when an external competitive risk occurs because in most cases this is due to a missing observation or a misjudgement of the key front line person or team (and his/her/their skills) in question.

Finally, the sixth type is attached to the problems in **measuring performance** throughout a company's three levels, each part and individual processes. In practice, managers may talk about the risks related to profit, costs or schedules, hereby indicating that actually one or several risks (of the other five types above) have been occurred. This helps managers both to understand the consequences and start tracking the cause(s), as well as to minimize (maximize) negative (positive) outcomes.

Thus, the suggested typology consists of the following **six principal risk types** (Fig. 3):

1. **Management risks** (such as failures in timing, making decisions, mobilizing and motivating) which, when they occur, have direct consequences for the company's performance and the attainment of the related objectives. Their direct internal sources lie in (a) the related vision, mission, business ideas, investments, strategies, plans, decisions and/or actions, (b) the implanting of common culture and values, (c) the management systems, (d) management capacity and structure, and/or (e) team-specific or individual skills (managerial and leadership) of the managers involved.
2. **Competitive market risks** (such as client-specific and competition-related events), which, when they occur, have direct consequences for the company's competitive position, performance, operations and/or capabilities related to the targeted market segment(s). The direct sources of these external risks lie in (a) the behavior of the clients and other stakeholders, and/or (b) the developments of the environmental factors. Indirectly, in (c) team-specific or individual skills of the managers and persons involved.

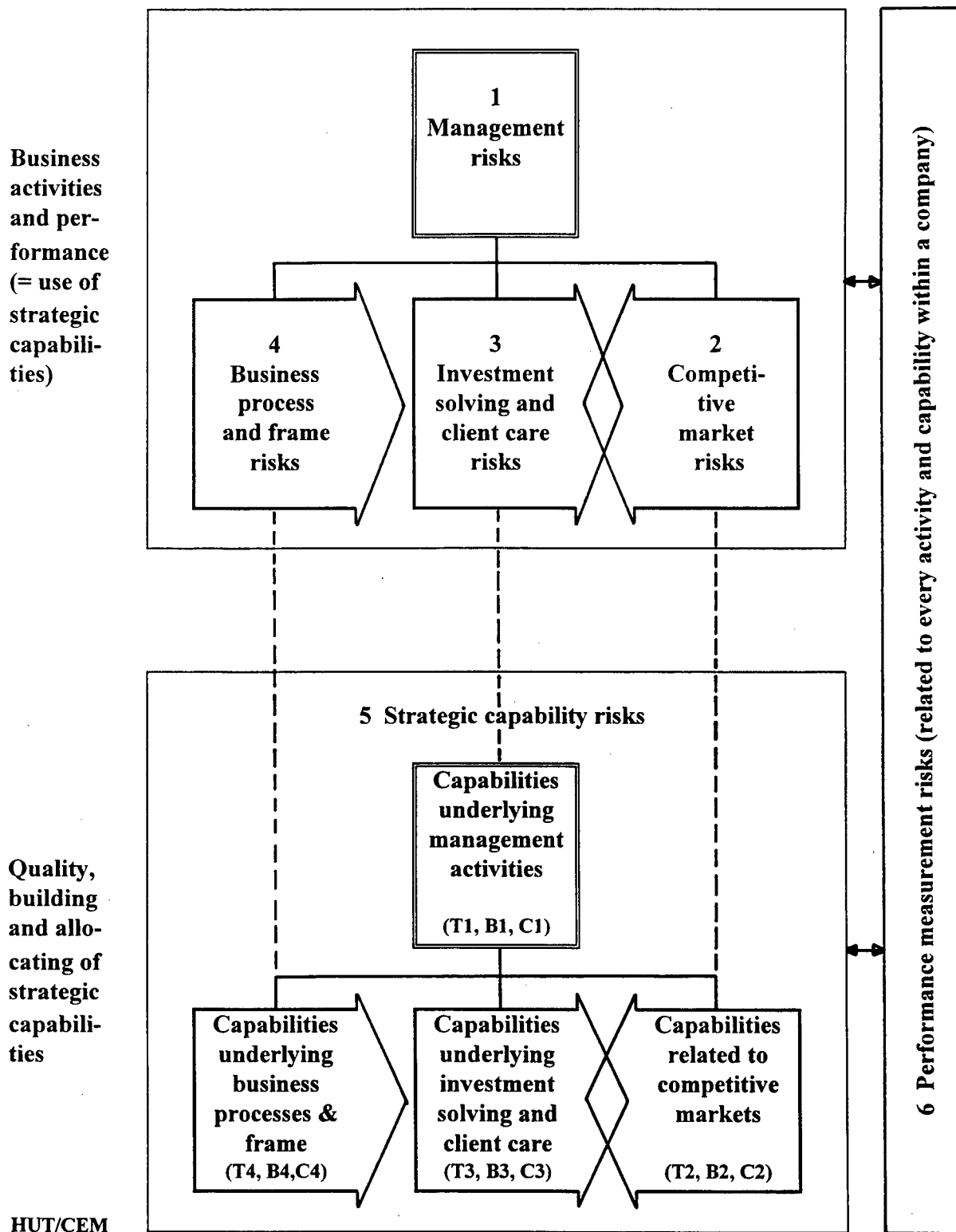


Fig 3. A suggested comprehensive, applicable risk typology for managing risks related to foreign capital investment markets. The typology consists of the six principal risk types 1-6.

3. **Investment solving and client care risks** (such as failures in investment solutions, non-conformance of products, and poor after-sales services) which, when they occur, have direct consequences for the company's related competitive position, performance, satisfaction of clients, and/or business processes. Their direct internal sources lie in (a) the design and attributes of the related marketable and core solutions (incl. systems, engineering & design, plants, construction, products and services), competencies and/or technologies, (b) the related scope and quality of services offered to clients, and/or (c) team-specific and individual skills of managers and key persons involved.
4. **Business process and frame risks** (such as failures in marketing, tendering, design supply, erection, and operation processes as well as a rigid company structure, outdated information systems, and unsuccessful acquisition of a local company) which, when they occur, have direct consequences for the company's competitive position, performance, client satisfaction and/or other interdependent operations within the same business/segment(s). Their direct internal sources lie in (a) the design and attributes of the related processes, procedures and operations, (b) the design and building of the process frame, (c) the planning of the related day-to-day operations (functions, activities or tasks), (d) execution of the process or operation in question, and/or (e) team-specific or individual skills of managers and key persons involved.
5. **Strategic capability risks** (such as failures in building sustainable technology platform, company-level business frame, or acquiring knowledge of the targeted market segment) which, when they occur, have direct consequences for the company's performance and competitive position. Their direct internal sources lie in (a) the envisioning and goal-setting, i.e. making scenarios on capability developments, quantifying future capability needs and uses, (b) the development and acquisition of new capabilities incl. partnerships and synergies, (c) the improvement and updating of the in-house capabilities, (d) the (re)allocation of the capabilities needed across businesses, markets, operations and projects, and/or (e) the team-specific or individual skills of the managers and key persons involved.
6. **Performance measurement risks** (such as delays, errors and omissions when monitoring and reporting of the targeted performance) which, when they occur, have direct consequences for the management's position to react fast and to make decisions on a sound basis. These risks are inherent in the management's way of measuring the company's performance. Their direct internal sources lie in (a) the design of the measurement system, principles and actions, (b) the installation and revision of the selected system, (c) the instructions how to use and/or the actual use of the system, and/or (d) team-specific or individual skills (incl. dishonesty) of the managers and key persons involved.

4.3 Towards concurrent, effective risk management

Finally, the question "How to manage anticipated, identified and occurring risks in a highly effective way?" is addressed. In view of the inherent risks [in construction], Flanagan and Norman (1993 p. 1) find it surprising that the managerial techniques used to identify, analyze and respond to risk have been applied in the [UK] industry only during the 1980s. There is **a gap between the theory and the techniques** proposed for managing risk, and what people do in practice. Intuition, expert skill, and judgment will always influence decision-making, but a set of tools is now needed which will enable risk management techniques to be put into practice in the [UK] construction industry. This view is adopted also here and, in addition, it is argued that the same gap exists within a majority of the companies operating in the foreign capital investment markets across the globe.

On the other hand, it is encouraging to detect that at least a few advanced risk management systems do exist, and are utilized, for example, by leading, globally operating contractors. At **Bechtel** (Rutgers & Haley 1996 p. 27-30), systematic, effective risk management is **a competitive differentiator, and an enduring source of competitive advantage**. "The goal is to get paid well for risks that (others perceive to be risky, but) you accept and can minimize with confidence. The allocation of risks to others means giving up opportunities for profit. Thus, relinquish only those risks over which you have no control or those that may present major concerns to you."

Also Ward & Chapman (1997 p. 96) foster "a new risk management culture based on a realisation that uncertainty can be **a source of opportunities**, and available opportunities need to be understood if they are to be effectively exploited".

Hertz and Thomas (1983 p. 4) have stated that "risk includes both the lack of predictability about outcomes and also **all the elements** of a problem structure. This includes ... the relevance of assumptions, the generation of [viable] alternatives, the level of organizational information about the problem, the importance of consequences and the ability to attain organizational goals".

To solve a management problem, a company's management must make the "best" choice among the available alternatives, or courses of action. Lilien and Kotler (1983 p. 38-39) argue that **there is no single best theory or model** for a particular company's given management problem. Rather, several models can be employed to describe a situation, depending on both the user (technically sceptical

manager versus sophisticated analyst), and the application of such models on those three levels (of a company, its businesses and foreign contracts). Thus, if no approach, theory, or model is best in an absolute sense, then no model can be transferred from one context or even company to another without adaptation or customization: models should be as **situation-specific** as the risks they try to help manage.

The general assumption underlying all (business) life seems to be that there will always be minor and/or major **changes and deviations** (of planned or desired issues) which then will be managed, dealt with or treated (un)successfully, and thus learning (as feedback) to avoid or manage these better in the future. This line of thinking is inherent a.o. in systems, (project) management, planning and control disciplines. For example, PMI's guidelines (1996) for managing projects emphasize this throughout their updated book as follows:

- " ... detect and correct errors cost effectively (p. 11).
- To the extent that significant variances are observed, adjustments to the plan are made... Controlling includes taking preventive action in anticipation of possible problems [in the future] (p. 32).
- Overall change control [means] coordinating changes across the entire project (p. 39).
- ... influencing the factors which create changes to ensure that changes are beneficial (p. 44).
- Corrective action is anything done to bring expected future performance into line with the plan. Lessons learned ... should be documented so that this information becomes part of the historical database ... of the performing organization (p. 58).
- Assumptions are factors that, for planning purposes, will be considered to be true, real, or certain. For example, if the date [or costs, time, resources, ...] is uncertain, the management may assume a specific date related to the issue in question. Assumptions generally involve a degree of risk (p. 40). Assumptions will normally be an output of risk identification (p. 61).
- Quality control involves identifying ways to eliminate causes of unsatisfactory results (p. 88).
- Prevention means keeping errors out of the process; inspection means keeping errors out of the hands of the customer (p. 89).
- Rework is action taken to bring a defective or non-conforming item into compliance with requirements or specifications - especially unanticipated rework is a frequent cause of (project) overruns in most application areas, [thus] every reasonable effort should be made to minimize rework (p. 92).

- Outputs of risk quantification are (a) opportunities to pursue and threats to respond to, and (b) opportunities to ignore and threats to accept (p. 117).
- Risk response development deals with procurement, contingency planning, alternative strategies and insurance (p. 120).
- Contract administration is the process of ensuring that the seller's performance meets contractual requirements" (p. 130).

ISO (1996 p. 19) states, in particular, that "the organization should **learn from** the project as part of a programme for continual improvement in other projects, current and future, including feedback from the customer and other stakeholders".

A **new concurrent approach for managing risks** is suggested as follows. The approach acknowledges known procedures of risk management that consist of such phases as risk identification, risk classification, risk analysis and response (retainment, transfer) to risks. The approach also allows the use of the existing techniques and tools for risk management, e.g. risk-adjusted discount rate, decision analysis, sensitivity analysis, utility models and risk sharing (see for example, Flanagan & Norman 1993; Hertz & Thomas 1983; Lifson & Shaifer Jr. 1982).

The emphasis of the concurrent approach is on those management situations when one or more of the identified or sudden, retained risks **actually occurs**. The term of concurrence is used for labelling the argument that managing business risks in an effective and sustainable way requires simultaneous actions along **the four lines** of prevention, compensation, external market knowledge (and understanding), and internal capability development. It is proposed that (proposition 4):

The most effective and sustainable risk management means that when one or more identified or sudden, retained risks occur, the manager(s) and key person(s) in question is (are) capable of reacting immediately by taking both (a) preventive and (b) compensatory actions, and at the same (period of) time, of initiating actions in order (c) to increase its knowledge of the related competitive market which will lead to better understanding of the market, and (d) to develop further the related strategic capabilities.

Risk management is here incorporated into the primary tasks of a company's line management and organization. In addition, a few in-house experts are needed (only) to offer all the support that is needed for establishing and improving continuously the suggested concurrent risk management system as well as building the related capability (incl. training) throughout the company. When a major risk

occurs, there are several key persons or teams involved who must act concurrently in a coherent way. Thus, all the key persons within the company in question must speak the same language.

Next, the concurrent risk management is defined in more detail. Premanagement (risk anticipation, transfer, retention and preplanning of retained risks) along the four lines of action forms a necessary preparatory phase. But you cannot premanage, by definition, all the primary risks, uncertainties and sudden changes. When on or more primary risks actually occurs, their effective and sustainable management requires that the managers and key persons involved will take the following actions (Fig. 4):

1. A **reactive, preventive** course of action. The aim is (a) to confirm the severity of the risk's consequences in terms of determining the differences between the targeted objectives, or desired state of affairs, and the actual less (or more) than desirable) degree to which the objective has been attained, (b) to make a forecast on the frequency, or duration, of the consequences, (c) to estimate the maximum possible loss, or gain, and (d) to plan and carry out the necessary actions for minimizing the loss (and/or ensuring gain) and, if possible, eliminating the negative consequences.

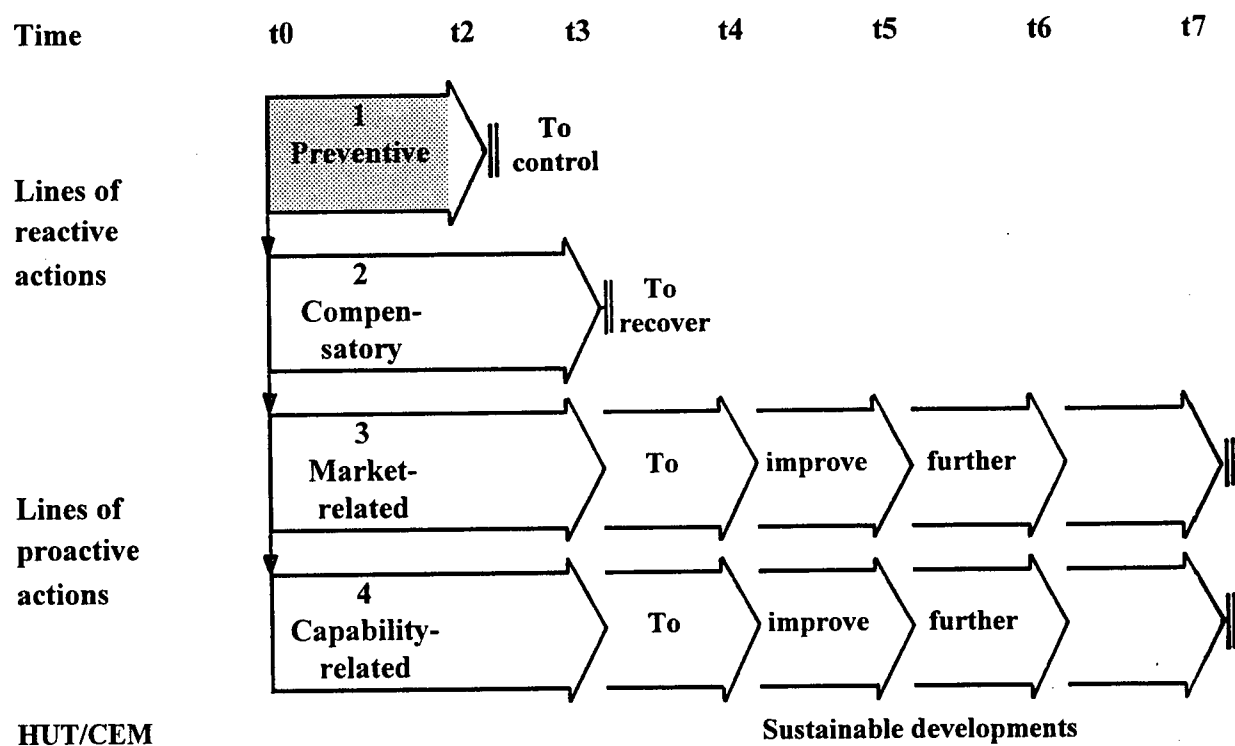


Fig 4. A suggested concurrent approach for managing risks (occurring) in an effective and sustainable way. (t_0 refers to the triggering point in time when the particular risk occurs).

2. A **reactive, compensatory** course of action. The aim is both (a) to compensate the expected total loss in the same or other business area, market segment, client group, contract, and/or the expected total damage of a company's processes, frame and/or strategic capabilities, and (b) to identify possible new business opportunities, triggered by the occurred risk.
3. A **proactive, market-related** course of action carried out with emphasis every time a competitive market risk occurs. The aim is (a) to improve the understanding of the competitive market developments, in other words, to make better assumptions or scenarios, (b) to develop further relationships with the key clients and other stakeholders (e.g. becoming better informed in the future), and/or (c) to improve the quality and availability of market knowledge including acquiring (un)structured data.
4. A **proactive, capability-related** course of action carried out with emphasis every time a capability risk occurs. The aim is (a) to improve the understanding of the company's strategic capabilities, particularly their embodiments as team-specific and individual skills, in other words, to anticipate and identify needs for capability improvements, and (b) to develop further especially those capabilities relating to the occurred risks.

5. **EXAMPLES OF SIX PRINCIPAL RISK TYPES RELATED TO FOREIGN CAPITAL INVESTMENT MARKETS**

The following four examples are hypothetical and (naively) encouraging in nature. The purpose is to demonstrate the suggested new approach for managing the dynamic, retained risks effectively when they actually occur. In reality, several risks of different types may often be interconnected, or hybrid (such as causative chains of triggering source => event 1 => event 2 and event 3 etc.).

5.1 **Replacing the business-specific manager (risk type 1)**

The company in question is a globally operating process consultant mastering the engineering and design of the pulp and paper industry's investments. Its traditional Business 1 has been headed by Manager A since the early 1980s. In the year 1996, the top management realized (after a series of incidents) that Manager A adhered tightly to the perception of technology advancements (between competing technology platforms) which was outdated. The company had lost their leading position and some of their major clients who had chosen to invest in those new technologies that allowed the use of versatile raw materials besides the wooden fibers (in the context of developing countries).

During the year 1997, the top management of this process consultant took several initiatives along the lines of concurrent risk management as follows (Fig. 5):

1. Manager A was replaced with **Manager B** who had already advocated, in vain, an ongoing process regarding a shift in technology. Manager B started renewing the technology platform of Business 1 along the envisioned, most attractive lines. (Reactive, prevention action)
2. The development of a **new Business 2** was started (earlier than the top management and the Board had anticipated) in order to compensate non-utilized business opportunities in Business 1. The goal is to increase the shareholder value of the company up to the level which will compensate the non-satisfactory performance of Business 1 by the year 2001. (Reactive, compensatory action)
3. A **new review routine** was introduced whereby all the technology forecasts of the major stakeholders world-wide, by technology area, is discussed openly and thoroughly twice a year in order to anticipate major changes in the future. This is to avoid the biased situations where Manager A (based on his sole authority) had overruled a.o. the use of reviews of competing technologies as a part of their strategic plans (as unnecessary pages). (Proactive, market-related action)
4. The use of **management teams** was revived throughout the company's divisions and business units. The teams were authorized to make (only) joint decisions on strategic technological issues (broadly listed down). When a team failed to reach consensus, one member of the upper management was called in, and/or thereafter after the decision was made at the upper level. This approach is done to empower even the middle managers and experts in technology; to have their say and take part in strategic choices. (Proactive, capability-related action)

In this first hypothetical case, it is argued that **the ultimate source** of principal management risks may quite well lie in the area of Corporate architecture capability (is T1 in the previous Fig 2, p. 9), and particularly in the long personal relationships among the managers belonging to the broad top management team. The boss of Manager A may have become his trusted colleague, or friend, who obviously had noticed and expressed his early doubts concerning the technological developments and the company's position. But it is likely that the stubborn Manager A was allowed to hold his views only up to the time when the first major deals were lost, which finally triggered the top management to act in the decisive way described above.

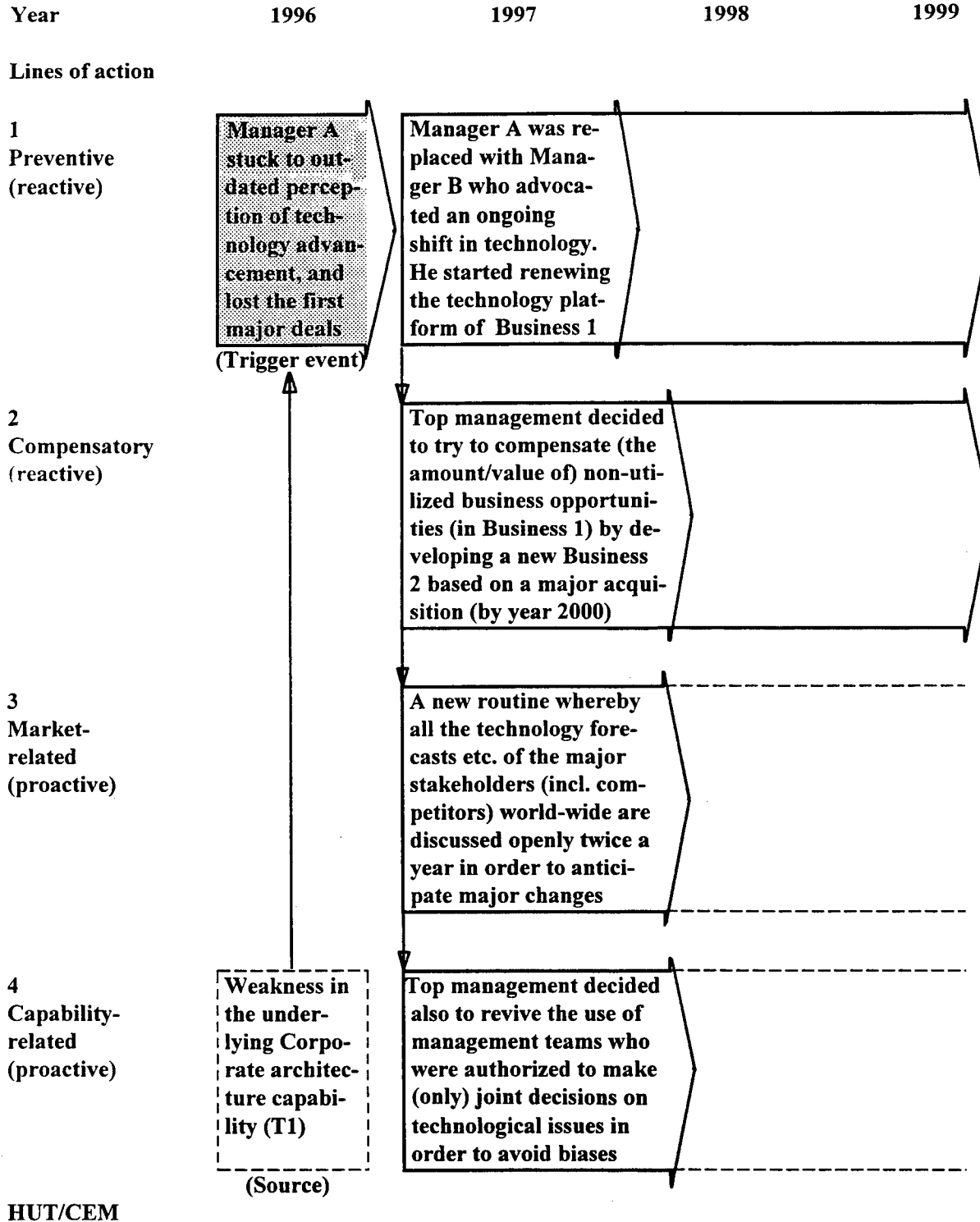


Fig. 5. Example of managing a manager-specific risk by a process consultant related to pulp and paper industry investments (primary risk type 1: management risk).

5.2 Compensating the postponement of the targeted capital investment (risk type 2)

The company in question is an internationally leading plant contractor of paper plants and related machinery. Its major Client A decided to postpone a multibillion investment (in FIM) in a new paper plant (investment decision was scheduled for Autumn 1997) at least to the year 1999 due to the latest scenarios with an expected downturn in paper demand. Autumn 1997, the related business group management of the plant contractor reacted to this postponement along the lines of concurrent risk management as follows (Fig. 6).

1. The contractor confirmed (during mutual talks) immediately after the public announcement) that **Client A's decision** holds. The contractor then revised its competitive strategy as well as rescheduled contacts with the client's decision-makers and revised tendering preparations accordingly for the years 1998-99. (Reactive, preventive action)
2. The contractor had already started to search for potential alternative investors after first hearing the rumors that several pulp and paper companies may postpone their investments. After Client A announced its decision the contractor evaluated the other identified companies and decided to **target Client B** which had scheduled a similar investment for the year 1998. The replacement of Client A with Client B involved designing a new client-specific competitive strategy and action plan in order to win the compensatory case. In addition, the required client-specific skills were determined, and the persons needed were reallocated. (Reactive, compensatory action)
3. The contractor nominated a **Task force 1** to educate their colleagues to develop deeper relationships with potential major clients and their decision-makers. For the first time, the concept of relationship marketing was introduced also to those contractor's key persons in the supply, erection, operation and maintenance side who are involved with client counterparts. (Proactive, market-related action)
4. The contractor nominated a **Task force 2** to incorporate contingency planning and more vigorous use of (viable) options as the basis for decision-making in each part and stage of the contractor's marketing and tendering. This is to ensure that key persons couple the primary targets with the secondary, compensatory options which are readily at hand when a similar risk occurs. (Proactive, capability-related action).

In this second case, it is argued that **ultimate sources** for client-related risks may quite well lie in the area of the contractor's Competitive settings capability (C2) and Client base capability (B2). It seems that postponements and indecisiveness (related to investors and their projects) are generally accepted features inherent in this business. It is something that process consultants and contractors cannot avoid. The contractor's accountant for Client A may not master skills to perceive and interpret, for example, (in)direct hints expressed by client decision-makers.

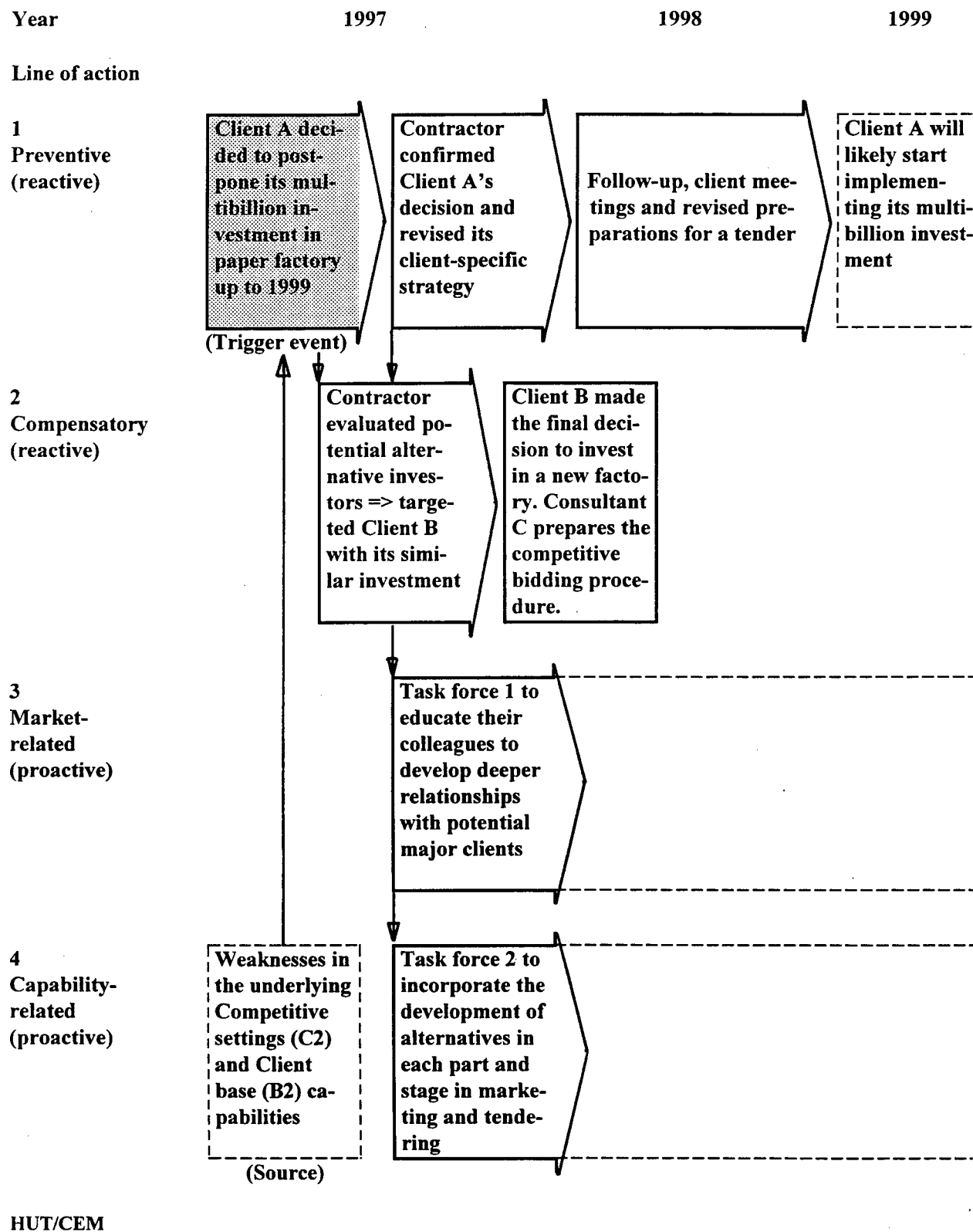


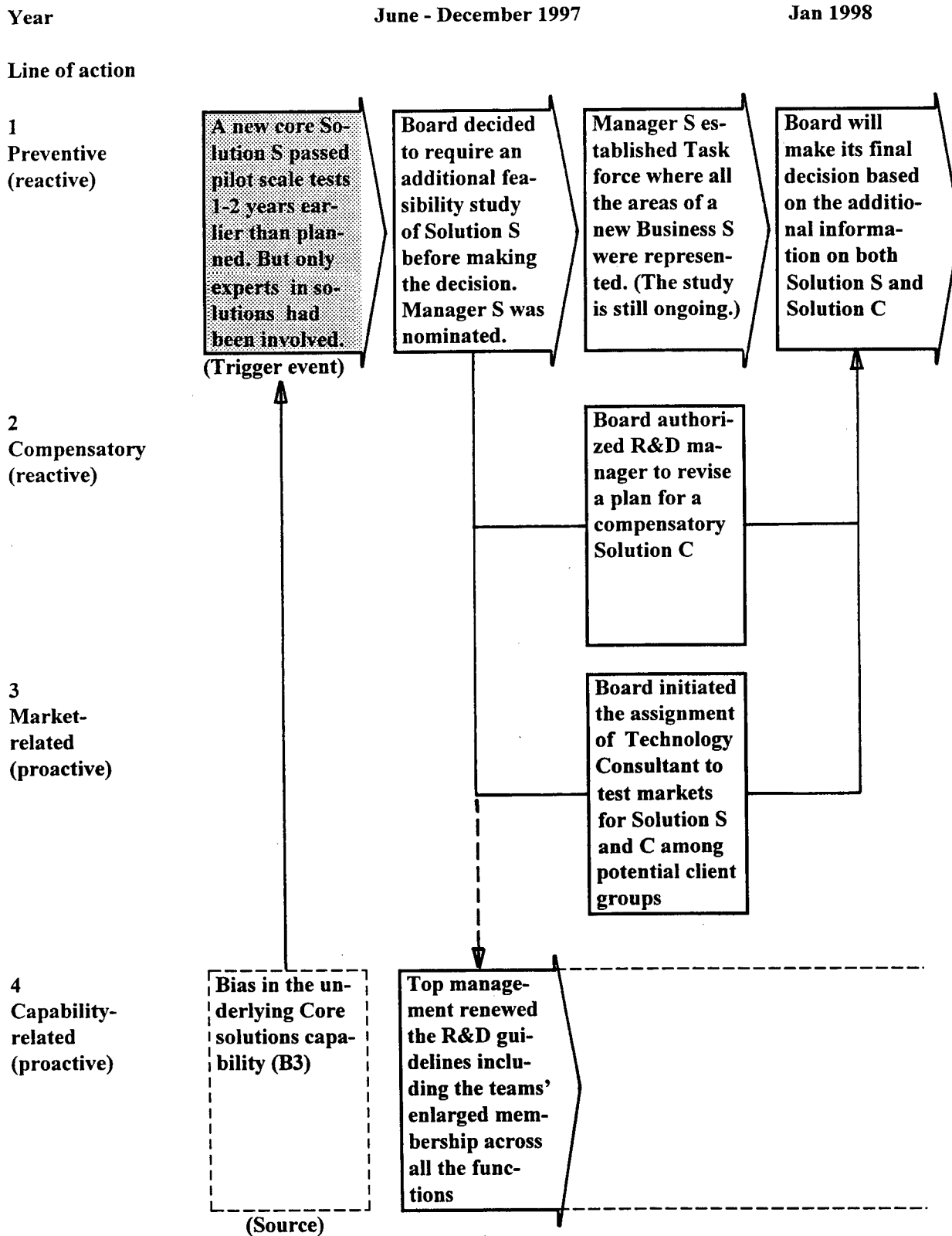
Fig. 6. Example of managing a client-specific risk by a plant contractor related to the world-wide pulp and paper plants market (primary risk type 2: competitive market risk)

5.3 Cross-checking innovation-based business opportunities (risk type 3)

The company in question is a leading system contractor of automated process management systems for chemical, pulp & paper etc. plants and processes world-wide. In summer 1997, the contractor's R&D management introduced a new core Solution S to the top management team (and later to the Board of Shareholders). However, the requirements for customizing Solution S were based only on the team's own scenarios. The Board felt that they needed more information and initiated the following concurrent actions to be carried out by January 1998 (Fig. 7):

1. Business Manager S was nominated to execute an additional feasibility study and report its findings to the Board. Manager S established a **task force** where all the areas of a new potential **Business S** were represented. Manager S is not responsible for the other concurrent actions. (Reactive, preventive action)
2. The R&D manager was authorized to revise a plan for a **compensatory** (internally competing) **Solution C**. This is to alert the decision-makers of the Board to consider all the relevant options. This action was initiated by Board member A. (Reactive, compensatory action)
3. Technology Consultant A was assigned to **test market** both Solution S and Solution C among potential client groups. Their interim results revealed that additional tests of applicability are needed for Solution S before its commercialization even in any of the three suitable Markets A-C. Board member A initiated also this action. (Proactive, market-related action)
4. Top management renewed **the R&D guidelines** now including the enlarged membership across all the functions inherent in this kind of automation systems business. This is to ensure that all the internal and external factors (knowledge) will be taken into account in the early stages of their systems development projects. This action was taken by the top management in order to begin to run the systems business "as usual" after this incident with Solution S where the Board actually had to take over the leading role. (Proactive, capability-related action)

In this third case, it is argued that **the ultimate source** for the speculative risk inherent in investment solving and client care lies in the area of Core solutions capability (B3). Why was the crucial capability for integrating the Core business processes (B4) not utilized from the beginning when the new Solution S was developed? The shortcoming seems to lie in the skills of the R&D management (and even the business management) who encouraged their systems experts to establish the Solution S Team from among their own ranks.



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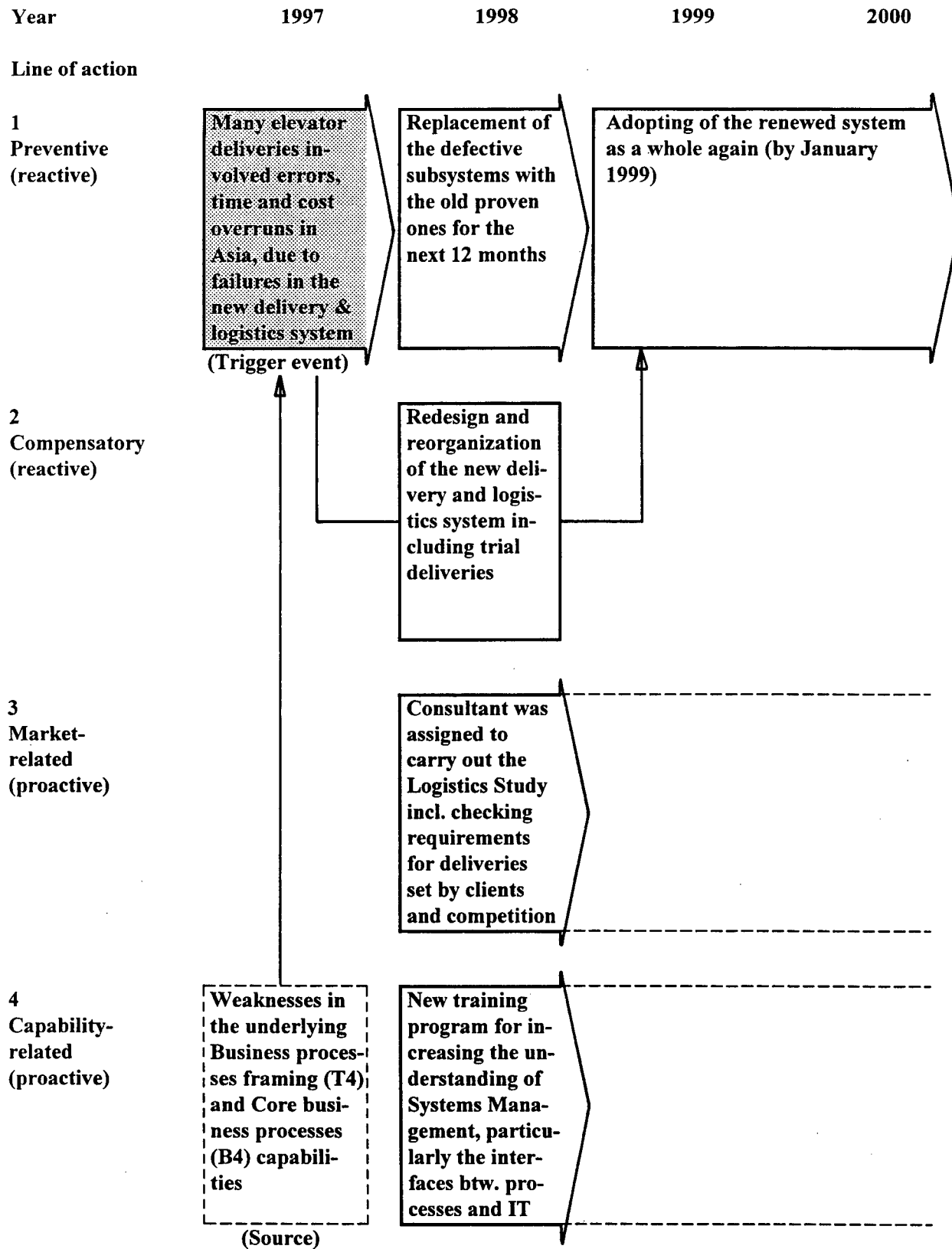
Fig. 7. Example of managing a solution-specific, speculative risk by a system contractor inherent in the automation systems business (primary risk type 3: investment solving and client care risk)

5.4 Redesigning a new regional delivery and logistics process (risk type 4)

The company in question is a major supplier of elevators in the European as well as overseas markets. In September 1997, the financial report indicated major time and costs overruns related to the elevator deliveries to the building sites in the Asian countries. The quality report revealed that these risks occurred due to the failures in the new regional delivery and logistics system which had been installed some months ago. The production and logistics management learned that removing the failures of the new system will take at least six months. The top management made the two crucial reactive decisions themselves and let the production and logistics management proceed concurrently with the two proactive actions as follows (Fig. 8):

1. Top management decided that the defective parts of the new system must be **replaced** with the old proven ones for the period November 1997 - December 1998. This is to fulfill the daily commitments and orders in these Asian countries. (Reactive, preventive action)
2. Top management decided that the new system must be **redesigned**, trial test deliveries be carried out, and finally the new system be adopted as a whole again by January 1999. This is to ensure that the new system will become feasible for at least the next few years. Even the partial redesign will be burdensome, because the model system consists of hundreds of primary factors and their relations. In addition, the model was calibrated and tailored for the elevator supplier's requirements jointly by the consultant (mastering the model system) and the supplier's own IT systems unit. (Reactive, compensatory action)
3. Production and logistics management assigned the internationally operating Logistics Consultant to carry out an additional **Regional Logistics Study** in the Asian context. Its emphasis is on checking and determining the future requirements for the new system, set by the current and potential new clients and the related competition. This is to confirm to what extent the system design is based on the relevant competitive requirements. (Proactive, market-related action)
4. Production and logistics management initiated a new in-house **training program** for increasing the understanding of Systems Management, particularly the interfaces between the delivery & logistics processes and the IT systems to support them. This is to avoid the same shortcomings in the future. (Proactive, capability-related action)

In this fourth case, it is argued that **the ultimate source** for this type of delivery and logistics system risk may lie in the area of the elevator supplier's Business processes framing capability (T4) and Core business processes capability (B4). Likely weaknesses in these two capabilities could be traced down to the level of the team-specific and personal skills of the related production, logistics and development management.



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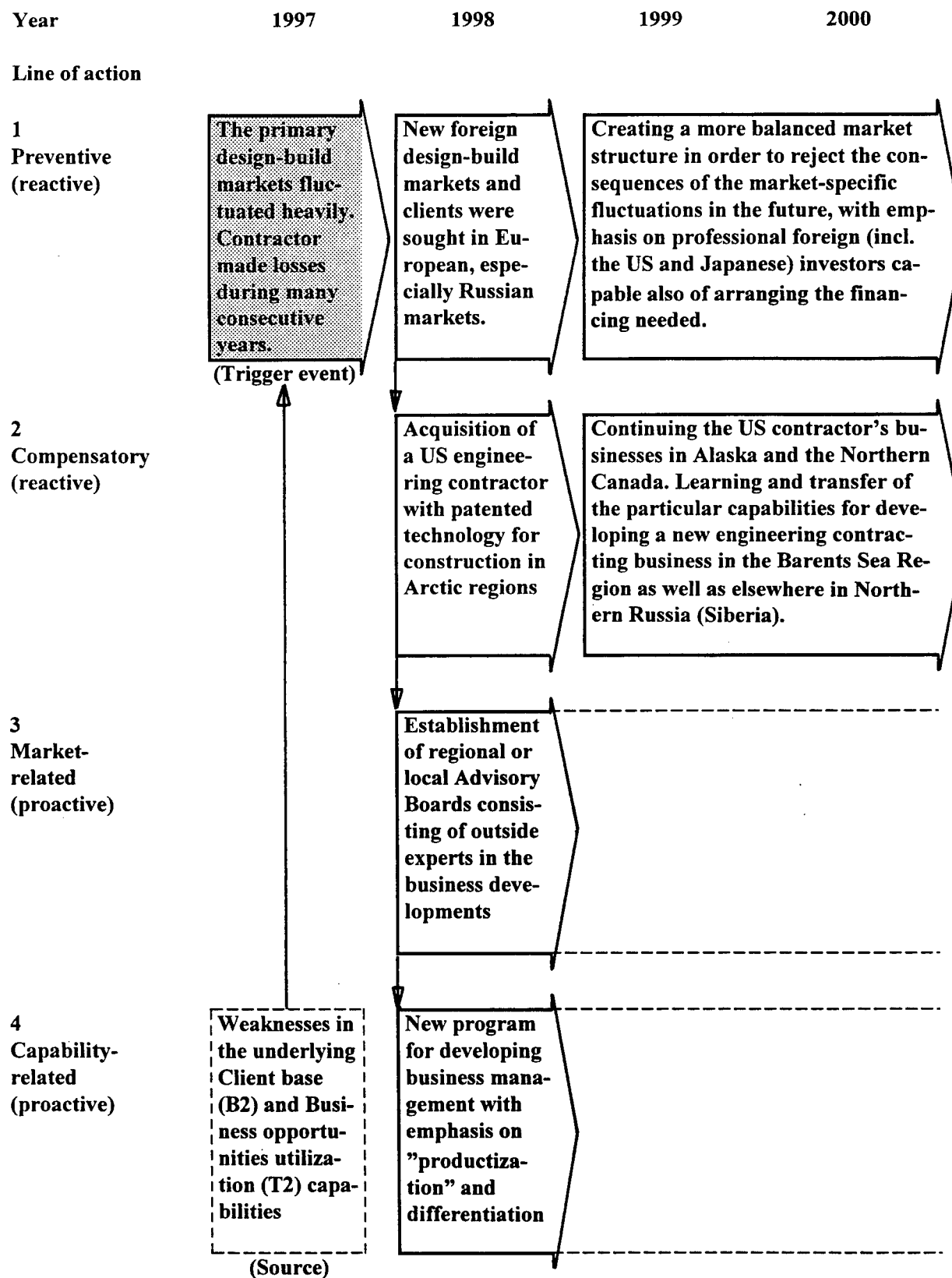
Fig. 8. Example of managing a delivery system-specific risk by an elevator supplier inherent in global logistics (primary risk type 4: business process and frame risk)

5.5 Acquisition of new business-specific strategic capabilities (risk type 5)

The company in question is a major regional design-build contractor in the Northern Europe. During the year 1997, the top management as well as the Board of shareholders realized that the contractor's current design-build business based on the general building and infrastructure markets will not grow to the extent which would return the contractor's annual income statement to the black. After losses in many consecutive years, the Board approved the following strategy (prepared by the top management) in order to ensure more sustainable developments in the future (Fig. 9):

1. **New foreign design-build markets and clients** were sought in the European, especially Russian markets. The goal is to create a more balanced market structure in order to reject the consequences of the market-specific fluctuations in the future, with emphasis on professional foreign (incl. the US and Japanese) investors capable of arranging also the financing needed. (Reactive, preventive action)
2. **Acquisition of a US engineering contractor** with patented technology for construction in Arctic regions. The goal is both to continue the US contractor's businesses in Alaska and the Northern Canada, and to transfer and learn the particular capabilities for developing a new engineering contracting business in the Barents Sea Region as well as elsewhere in Northern Russia (Siberia). (Reactive, compensatory action)
3. Several **regional or local Advisory Boards** were established in the major geographical markets consisting of outside experts in the business developments. This is to get better informed on the local business opportunities and developments. In addition, certain influential members will be appointed as the contractor's representatives in those occasions when strong local contacts, experts or sponsors, are needed. (Proactive, market-related action)
4. **A new program for developing business management** was initiated by the Board, with emphasis on "productization" and differentiation. This is to ensure that the current and potential future business-level and contract-level managers are equipped with the understanding and new skills needed for managing more technology-intensive contracting businesses in the coming years. (Proactive, capability-related action)

In this fifth case, it is argued that **the ultimate source** (a) for the risk of adhering too long to the existing design-build business/markets may still lie in the area of the contractor's Client base (B2) and Business opportunities utilization (T2) capabilities, or perhaps the management involved was tied to the Board's decision. (b) For the new business developments, the strategic capability risk may lie in the overall Architecture (T1) and the related Business management (B1) capabilities. This latter risk (of too narrow skills of the current managers) could be managed by recruiting a few new managers with the proven experience in managing technology-intensive businesses.



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Fig. 9. Example of taking and managing a new business-specific risk by a design-build contractor (primary risk type 5: strategic capability risk)

5.6 Renewing the performance measurement system (risk type 6)

The company in question is a global system contractor of mobile and fixed telecommunications networks. In September 1997, without prior warning, the monthly financial report was showing huge losses in its major Business A. The business management traced all the possible risk-related events occurring during the third quarter of July - September 1997. The failure was not in the reporting system as such. One of the regional managers, Manager A, had been hiding the actual state of affairs for 2-3 months. Several risks had occurred. The huge losses were due to the cost overruns in their two ongoing delivery Projects X and Y in Region A. However, the most fatal risk incurred was one in which a major competitor had launched its next-generation technology and attracted all the major clients, i.e. telephone network operators, which then chose this technology for the coming years. These choices were neither reported by Manager A, nor publicized yet by the network operators.

The top management took over and started to manage the risks concurrently as follows (Fig. 10):

1. **Authorizing business controllers** to get direct, primary data (besides the compiled reports) on projects and operations in all the business, regional, country units. Client accountants report also to controllers besides the related business and marketing management. (Reactive, preventive action; coupled with the fourth action)
2. **(a) Replacing Manager A** and restructuring the related business plan and strategy A for the years 1998-1999, **(b) replacing** Project managers X and Y as well as revising the project plans, as well as **(c) redesigning** the strategies of the other major Businesses B-D in order to achieve compensatory, profitable growth. (Reactive, compensatory action)
3. **Assigning a global Business Consultant** to carry out a study of the served (= by the contractor in question) and unserved existing (= served by the competitors) and emerging network operators in major markets. (Proactive, market-related action)
4. **Renewing guidelines for Performance Measurement** with emphasis on the face-to-face discussions on aims, means and results. (Proactive, capability-related action)

In this sixth case, it is argued that **the ultimate source** for this type of performance measurement risk may well lie in the area of the System contractor's architecture (T1) and Business (B1) management capabilities. The contractor's management philosophy and supporting systems may not have been adjusted enough to meet the cultural rationale and behavior of its local business managers, marketing managers, and client accountants across the globe.

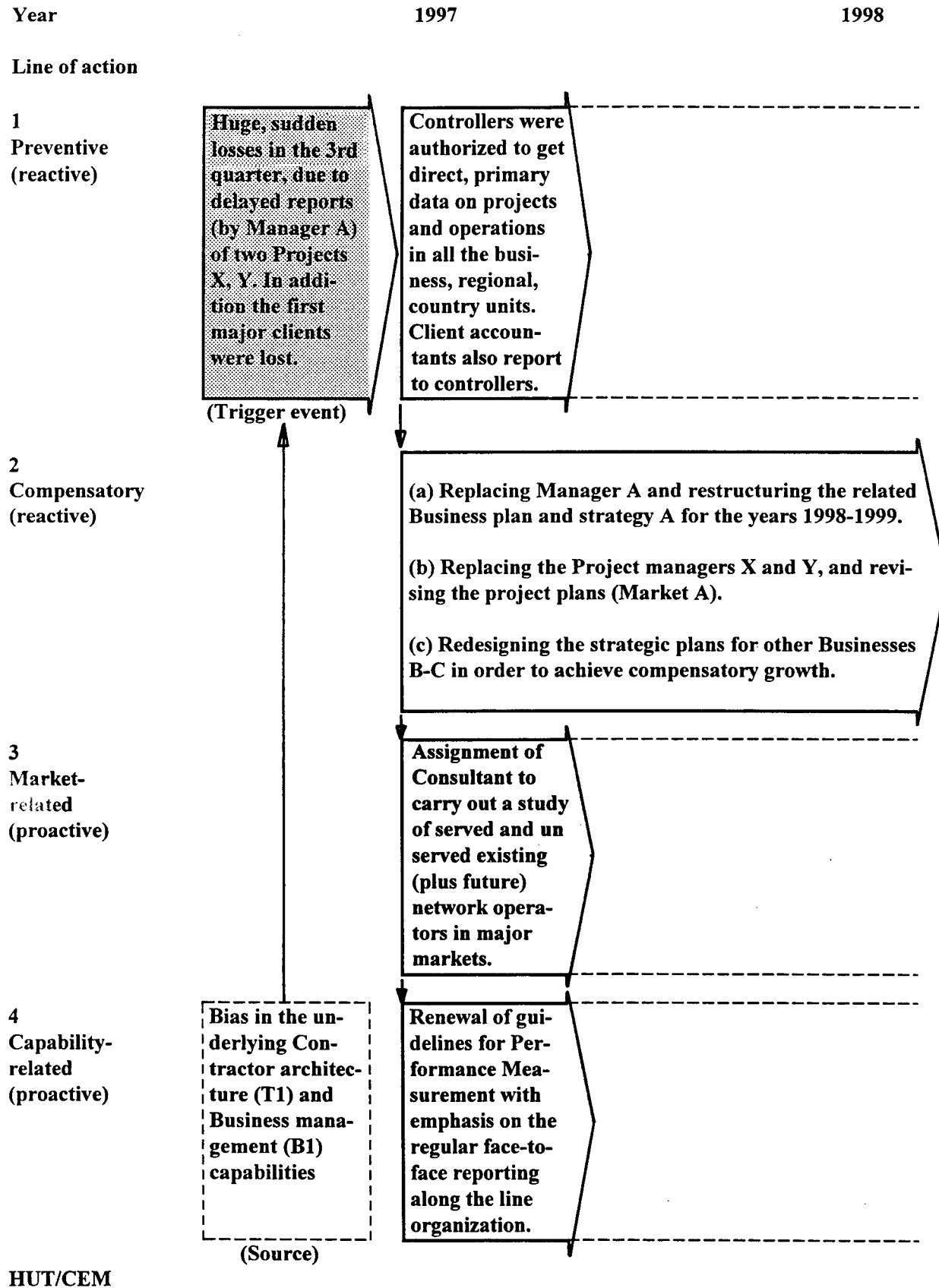


Fig. 10. Example of managing a risk inherent in measuring business performance by a system contractor related to the telecommunications networks business (primary risk type 6: performance measurement risk).

6. CONCLUDING REMARKS

In the short-term, the suggested framework will be adjusted to the similar and differing characteristics of the five company or business groups belonging to **Finland's capital investments cluster**. The five groups are building products suppliers, construction designers, construction contractors, technology-intensive contractors as well as process engineers and consultants. The results will be publicized in the main report of the ongoing study of competitiveness, first in Finnish and later in English.

Thus, the working paper is concluded with the question **"What kinds of companies will need, or benefit most from the adoption of the suggested approach for managing their international competitiveness and related risks?"** It is proposed that (proposition 5):

Any theoretically sound approach (framework, procedure or model) for managing a company's international competitiveness and related risks is more needed and more beneficial:

- (a) the larger the company and its primary businesses are
- (b) the more globalized, or internationalized the company is
- (c) the wider and more complicated the company's business and market structures are
- (d) the more technology-intensive the company's business and contracts (projects) are.

On the other hand, the adoption of this kind of comprehensive approach for managing international competitiveness sets **basic requirements** for the level of a company's management philosophy, capabilities, and systems.

In the longer term, the author's aim is to make the propositions 1-5 presented in this paper operational, to define related sets of hypotheses, and to verify these empirically. For this purpose, a representative sample of Finnish and foreign companies will be chosen based on their operations in global capital investment markets.

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Unit of Construction Economics and Management (HUT/CEM)

Staff

Professor Juhani Kiiras, Associate Professor Jouko Kankainen, Laboratory Manager Arto Saari, Senior Assistant Pekka Huovinen, Assistant NN, and Secretary Leena Honkavaara. In addition, 6-8 researchers and 6-8 research assistants carry out project specific tasks annually.

Research approach and current activities

At the unit of the Construction Economics and Management (HUT/CEM), applied research and development assignments are carried out in cooperation with Finnish companies and institutions, as well as other research institutes. HUT/CEM serves its clients, who mostly are practitioners, by helping them to solve their problems. A theoretical, scientific approach is often combined with searching for empirical evidence through e.g. action research, case studies and testing. In action research, our researchers are directly involved in the client's organizations, and try either to verify the a priori hypothesis in on-going, real situations, or to observe and learn first new developments from the practice which will initiate theory building process. Economic theories, systems theory, steering and management theories as well as the latest management tools (such as business process reengineering and TQM) are applied.

HUT/CEM's fields of discipline are both building and civil engineering. The scope of expertise includes all the phases in the life-cycle of construction investments: feasibility studies, design, contracting, works, procurement as well as use, maintenance and renovation. Our core competences are related to project management, information management, scheduling, costs engineering, risks management, quality management, corporate management, business and competitiveness development and internationalization.

By the year 1997, HUT/CEM has achieved the following noteworthy results: a Building Costs Data System (such as Target Costs Control Procedure and building element estimate and control), a "GUIDE & SAFETY" production management & planning system, (especially block technique and line-of-balance method), repetitive works planning (for renovation works using cell production method and short throughput times), a Life-Cycle Costs Estimating & Data System for Buildings, planning method and technical documentation for renovation works, as well as a so-called "Spearhead Strategy" for exporting construction & design services, prefab systems and products into the EU markets and neighbouring markets in Russia and the Baltic countries.

Some of HUT/CEM's most recent research programs are as follows.

Management of renovation works

Just-in-Time principles are applied to repetitive renovation works in multistorey apartment blocks where residents continue their daily living during the repairs. The throughput time is cut down into 2-3 weeks per apartment, allowing for steady speed and high, error-free productivity in production. The first case studies included eight renovation work sites in the Helsinki area during 1994-1995.

Life-cycle costs of buildings

HUT/CEM has developed a Cost Management System for annual and shorter term maintenance of buildings. The system can be applied to both new buildings and renovation works. Prices and costs data will be updated annually. The system includes a PC program (TILATAME 1.0), based on

EXCEL spreadsheets. Building owners and maintenance companies can calculate a.o. target consumption of energy, and annual target costs and maintenance works.

Quality Management

HUT/CEM has focused on achieving quality improvements at sites, and small and medium-sized contractors' QM systems. Scrap, rework and site costs can be decreased significantly due to adoption of the following methods at sites: project and activity specific quality planning, quality circles, handingovers first to own auditors and potential problems search.

International Construction Business

HUT/CEM focuses on supporting Finnish companies to enter and penetrate the neighbouring export markets, especially in Russia, Estonia, and Germany's new states. HUT/CEM offers expert and R&D services related to establishing and developing the export competitiveness as a whole, and distinct core competences in contracting, design and prefabrication companies. These services include a.o. market analyses, technical product viability studies, test marketing, export and localization strategy development, standard, costs and prices analyses, and exploring local construction practices.

On-going research and new entries 1997-1998

In the coming years, HUT/CEM will both continue its established work and make the new initiatives related to the following research topics: prefabrication at the EU building sites using mobile production units, expert systems for building maintenance, material and energy flows estimation for buildings in the context of life-cycle assessment (LCA), planning methods for renovation works, long term cooperation in procurement, design management in civil engineering projects, renewal of cost data system, capability-based internationalization strategies, and participation in the selected EU's research programs.

News on education

The latest activities include the establishment of the new minor "International Construction Business" (16 credits) in co-operation of the HUT's Industrial Management Department. The learning language is mainly English which enables the participation of visiting foreign students as well.

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